An analysis of agriculture subsidies in the rubber and padi sector of Malaysia

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AN ANALYSIS OF AGRICULTURAL SUBSIDIES IN

THE RUBBER AND PADI SECTOR OF MALAYSIA

submitted by

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بسم الله الرحمن الرحيم

IN THE NAME OF ALLAH, MOST BENEFICIENT, MOST MERCIFUL

Dedicated to:-

My Parents

My Wife, Hamisah

My Children,

Yuliana

Yazmin

Johar Arif

Johan Ikram

Yuhanie

Ahmad Ashraf

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ABSTRACT

Malaysia is primarily an agricultural country where the smallholder sector is predominant. An integral part of the government strategy in agriculture is the heavy subsidisation of the smallholder sector. However, recently, the Malaysian government declared that the extensive system of subsidies in agriculture would be thoroughly reviewed with the ultimate objective of cutting back on subsidies which were deemed to be wasteful and unproductive. The government has taken the official stand that farmers and smallholders should not rely excessively on subsidies and that they must be more self-reliant and do away with the so-called " subsidy mentality ". The thesis attempts to investigate the claim of the government whether there is such a thing as a " subsidy mentality " among Malaysian farmers and if there is one the reasons for its existence. In order to establish this claim, it is necessary first to prove whether or not subsidies contribute towards improving the productivity and welfare of farmers. This is done by analysing the allocative and redistributive effects of agricultural subsidies in smallholder agriculture. In addition, the thesis also attempts to go further by investigating how farmers perceive and respond to subsidies by studying their attitudes towards specific subsidies. This is done by undertaking empirical investigation of two main smallholders' activities in Malaysia, namely smallholder rubber cultivation and rice farming through the technique of sample survey. The study found that the effect of subsidies differs between different crops, types of subsidies and between farm and regional level. Hence the effect of subsidies is not conclusive. Generally, farmers had a positive attitude towards subsidies and most of them had to rely on subsidies because they were poor.

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GLOSSARY

BPM	- Agricultural Bank of Malaysia
DID	- Drainage and Irrigation Department
DOA	- Department of Agriculture
FELDA	- Federal Land Development Authority
FELCRA	- Federal Land Consolidation and Rehabilitation Authority
KADA	- Kemubu Agricultural Development Authority
LPP	- Farmers' Organisation Authority
LPN	- National Padi and Rice Authority
MADA	- Muda Agricultural Development Authority
MARDEC	- Malaysian Rubber Development Corporation
MOTI	- Ministry of Trade and Industry
PPPK	- Smallholders' Development Contres
RISDA	- Rubber Industry Smallholders Development Authority

CHAPTER ONE

INTRODUCTION

1.0 STATEMENT OF PROBLEM

Malaysia is essentially an agricultural country where about 41 % of its work force was employed in this sector in 1980. Since the country gained independence in 1957, rural development has been given top priority and agricultural development constituted the core thrust of developmental focus of the government. This is clearly seen in the huge budgetary allocations that were set aside for agriculture in the five year development plans. Most of the money allocated for agriculture in fact went to various subsidy programmes that were subsequently instituted. However, while the government was deeply involved in its efforts to develop the backward agriculture sector, at the same time it was concerned that its liberal subsidy policies might have an adverse effect on its limited financial resources and of the likelihood of negative impact that these policies might have on the farmers themselves who tend to rely excessively on government subsidies. This over-reliance of farmers on the government - which may be termed as the " subsidy mentality " - is a cause of deep concern for policy-makers in Malaysia. In fact this is a dilemma faced by almost all developing countries which is to what extent should farmers be subsidised and how much subsidies is considered adequate to help farmers stand on their own feet.

There is a general fear among the policy makers in Malaysia that excessive subsidisation of the smallholder farming sector is

wasteful to the economy and detrimental to national objectives of creating a class of progressive farmers. This is because the government perceives that agricultural subsidies do not seem to contribute much to enhance productivity while at the same time, farmers do not seem to be adequately motivated to work harder when they receive subsidies. It is widely thought that farmers seem to take the subsidies given to them for granted. In Malaysia, this attitude is frowned upon and the small farmer who manifests all the above symptoms is said to have a " subsidy mentality ". Here the government seems to perceive that its aid and incentive policies, particularly in the granting of input and output subsidies have only managed to transform the farmer into a mere passive recipient of aid while their level of effective utilisation of the subsidies remained relatively low and marginal. The net effect of all this, it is argued has been a decline in the general productivity levels of farmers which have not improved significantly. In addition, it is alleged that farmers underutilise and even waste subsidies that were granted to them. This view of the government is further reinforced by the fact that the poverty levels of subsidy-receivers (assumed to be small farmers) have not improved and that output levels have remained stagnant. (It is important to note here that the government assumes that its subsidy programmes would be adequate to uplift farmers above poverty levels). From this it is clear that the government does not consider the granting of all agricultural subsidies as merely income transfers but rather subsidies as valuable resource inputs meant to act an incentive for improving resource allocation and the productivity of the farmer and hence his

income level. However, in practice there are some types of subsidies which are more redistributive in nature rather than allocative. For example, the padi price subsidy launched in 1980 is meant mainly as a redistributive mechanism to increase the income position of the farmers. Therefore, in assessing the impact of subsidies, consideration must be given to the nature of subsidies involved.

In 1984 the government commissioned the Economic Planning Unit with the assistance of the World Bank to undertake an extensive reappraisal of the agricultural subsidy policies in Malaysia with a view of rationalising the whole system and with the aim of either reducing, retaining or even removing certain kinds of subsidies. The study recommended that the system of agricultural subsidies should be reviewed and rationalised. It is postulated that the attitude of the government towards the agricultural sector in general and subsidies in particular have changed dramatically in the 1980s due to the following factors :-

i) attitude of new leadership on role of agriculture viv a vis the manufacturing sector

ii) the need for a full commercialisation of the agriculture sector

iii) dismal failure of present government strategies on subsidies

iv) financial constraints facing the country due to the recession.

In the light of the above situation, policy-makers in Malaysia believe that it would be in the best interest of the country if the government were to trim and reduce the amount of subsidies given to farmers. In this connection, it is relevant to quote the Mid-Term Review of the Fourth Malaysia Plan published in 1984 which stated that,

" ..... Agricultural subsidies have claimed a substantial amount of the financial resources of the government. The role of agricultural subsidies in agricultural development will need to be reviewed, not only because of the tightening of the financial resources of the government but also because of the long-term effect of subsidies on the farming community. An important task in the years ahead will be the need to progressively reduce the dependence of farmers on subsidies, i.e. to eliminate the subsidy mentality which has been part of the agricultural system in the country. The continuation of an extensive system of subsidy is eroding the will of farmers to be more independent, self-reliant and to raise their productivity and' income by utilising their own resources, rather than relying excessively on the support of the government. "

In connection with this, we are interested to investigate whether what the government says about the farmers vis a vis subsidies is true or justifiable in the light of empirical data. Our intuition asserts that that the government has not been fair in blaming farmers for the failure of subsidy programmes without first of all providing a solid empirical basis for its allegation. In official documents we have not seen any but general and vague statements about farmers being too dependent on the government. It is our belief that subsidies are just one aspect of assistance to farmers and their impact therefore cannot be analysed in isolation. Other problems of a structural-institutional nature should not be ignored when assessing farmers' performance. In fact before arriving at any conclusions regarding farmers' response to subsidies, it is necessary to evaluate the effectiveness of each subsidy programme

objectively and not merely to make empty statements about farmers attitude and labelling them as having a " subsidy mentality " which is perjorative and demoralising to farmers. If farmers were to have a high " subsidy mentality " by implication it means that farmers are not productive, not diligent, not self-reliant, have no initiative or just plain lazy. Although the government may have good intentions by coining and popularising this terminology in order to make the farmers stand on their toes, we believe that it must have an empirical basis. To do this it is necessary to study the impact and evaluate the effectivenes of subsidies on all crops that are currently subsidised by the government. In addition, it is necessary to find out farmers' attitude and perception towards subsidies. It is therefore our intention in this study to make a small contribution to the continuing debate on farmers' response to subsidies and whether subsidies have contributed positively or negatively in achieving the developmental goals of the government. The specific objective of our study is a modest attempt to evaluate the effectiveness of subsidies and to find out how farmers perceive subsidies and factors determining their behaviour. It is hoped that some useful lessons may be drawn from the study which might be used as important input in formulating future policies pertaining to subsidies in Malaysia. We believe that an assessment of subsidy programmes based only on economic consideration is inadequate and that there is a need to further assess subsidies from farmers' perception and point of view.

2.0 OBJECTIVE OF RESEARCH

The objective of the study is to investigate whether the proposition of the government as summarised above is valid and justified. For this purpose, we propose to confine our investigation to the level of small farmers for the following reasons :-

i) it is the contention of the government that the majority of small farmers do not respond adequately and positively to government subsidies

ii) the small farming sector constitute the majority of the whole work force in Malaysia

iii) the small farming sector is the poorest category of workers in the country

iv) most of the small farmers belong to one racial group, namely Malays in a multi-ethnic society

The focus of the research is to study the effectiveness of subsidy programmes. Among the issues that we expect to cover in the study include the following :-

i) effect of subsidies on the resource allocation behaviour of small farmers

ii) effect of subsidies on productivity and income levels of small farmers

iii) perception and attitude of farmers towards subsidies

In this study we will confine our investigation to small farmers in the rice and rubber sector. The more specific objectives of the study are as follows :-

i) to determine the effect of agricultural subsidies on the income of farmers by looking at changes in production level, cost of

production and form of usage of these subsidies

ii) to determine the effect of agricultural subsidies towards overall padi and rubber production

iii) to determine to what extent the implementation of agricultural subsidies have benefited the target groups

iv) to get an overall picture of the socio-economic status of small farmers before and after subsidy schemes have been implemented

v) to determine whether redistributive goals of subsidies have been achieved.

3.0 WORKING HYPOTHESIS

To assist us in the research, it was necessary for us to formulate a few working hypotheses as follows :-

i) Subsidy policies are favoured because they tend to stimulate the use of new production inputs which were previously not accessible to farmers either because they were too expensive or they were not known to farmers. However, we are postulating that these subsidies have failed to stimulate the use of these new inputs either because these subsidies did not benefit the small farmer or because they never reach them.

ii) Subsidies are also widely used because they tend to increase output of farmers. However, in the Malaysian case we are postulating that subsidies do not enhance the productivity of farmers due to the presence of intervening variables between the administration of subsidies and the final outcome.

Hypothesis 1 and 2 therefore states that the allocative effect of subsidies to stimulate input use and output increase in

production in Malaysian agriculture is negative.

iii) It is also hypothesised that excessive, unselective and indiscriminate granting of subsidies to small farmers is not conducive to their work attitudes and motivation and hence productivity due to the phenomenon of " subsidy mentality ". It is postulated that small farmers in Malaysia are too dependent upon government subsidies and that they exhibit the " subsidy mentality " which in turn affects their productivity.

4.0 RESEARCH METHODOLOGY AND APPROACH OF STUDY

The thesis will attempt to test all the above issues highlighted by these hypothesis by studying the padi and rubber sector at the smallholder level in Malaysia. Four chapters will be devoted to the empirical section using primary data from a survey and secondary data from published sources. Regression analysis supplemented by extensive tabulation analysis will be widely used.

Methodology of Data Collection

To generate primary data two sample surveys were undertaken in the state of Perak in Peninsular Malaysia. The field survey technique was used to generate primary data. The stratified random sampling method was employed to choose respondents in which the population was divided into a number of groups or strata. These strata consist of administrative units or districts and sub-districts. Within each stratum a random sample of farms were selected. This meant that every farm had an equal chance of being selected. The data collection instrument employed was the

questionnaire which was administered by interviewing farmers personally. The questionnaires were designed to extract information on the broad socio-economic structure of farmers and on the input, output, income and expenditures before and after subsidy situation. Questions related to farmers' attitude to subsidies also form an important part of the questionnaire. They were mainly qualitative in nature soliciting open-ended and also closed-ended answers.

On the other hand, secondary data was obtained from published official documents plus published and unpublished work from various government departments and statutory bodies.

Steps in Field Survey

In attempting to generate data from the survey, the following steps were thought to be critical :

i) Identify sector to study

ii) Identification of region

iii) Questionnaire design

iv) Identification of sample through stratified sampling

v) Identification of village and household to survey

vi) Administration of pilot survey

vii) Administration of actual survey

viii) Collation of data

ix) Analysis of data

Limitations of Data

Despite taking all the precautions necessary to ensure that data generated would be good and unbiased, certain procedural matters tend to undermine the quality of data. Some of these include the following :-

i) The interview was done personally by the author on a once for all basis where the head of household was interviewed for an average time period of one hour. There was no time to check data inconsistencies.

ii) Farmers who agreed to be interviewed either in their homes or fields had to rely mainly on their memory.

iii) Farmers were chosen at random and were not given advanced notice of the intention to interview them.

iv) Field staff of LPP and RISDA accompanied the author on all interviews in order to facilitate the survey - how far responses were biased cannot be determined.

v) An average of 8 households were interviewed per day. This meant that interviews schedules were intensive and exhausting to the author.

In summary, the limitations of data were mainly due to limited time available to the author and resource constraints.

For padi areas, the survey was conducted during the new planting season while for rubber areas, survey was only conducted on smallholders who had replanted at least once. Data was collated and analysed manually because the number of respondents was relatively small. (padi, n = 75; rubber, n = 87) RATS (Regression Analysis for Time Series Programme) was used to run regressions.

5.0 OUTLINE OF THESIS

The body of the thesis is presented in three sections. Part I comprise a review of the literature on agricultural subsidies, both theoretical and empirical and the small farmer, the target group of subsidy policies. Chapter 2 discusses the rationale and theoretical justification for subsidies in general and agricultural subsidies specifically. Chapter 3 discusses on the impact of subsidies on resource allocation and on welfare and income distribution. The economic literature is explored for its contribution to the study of the consequences of subsidies. Chapter 4 focusses the discussion on the small farmers as recipients of subsidies and discusses their motivations, values and work orientation and their attitudes to work. Part II of the thesis is on the analysis of data. Chapter 5 introduces the section by giving an overview of agricultural development in Malaysia and a general survey on the extent of agricultural subsidies in Malaysia. Chapter 6 and 7 discuss the padi and rice sector. Chapter 6 is a macro or economy wide analysis of input and output subsidies while Chapter 7 discusses the survey data. Chapter 7 also focuses the discussion on the attitude of rice farmers to subsidies. Chapter 8 and 9 deals with the rubber sector with the former taking the macro perspective and latter the micro perspective. Chapter 10 synthesises and compares the findings between padi and rubber sector and gives the findings and policy implications of the whole study.

6.0 LIMITATIONS OF THE STUDY

This study is an attempt to analyse the impact of subsidies on productivity and income levels of farmers. It also analyses how farmers respond to subsidies. Therefore, besides dealing with the allocative and redistributive aspects of subsidies, the study also analyses farmers' attitude to subsidies. In conventional economic analysis, it is sufficient to deal only with the economic aspects while the attitudinal aspects are barely touched upon. Farmers' attitude and motivations to economic incentives are always assumed to be constant. Hence, this study has attempted to integrate both kinds of analysis together in order to give it a wider perspective and hopefully it will enable us to understand better how farmers behave and react to economic incentives. However, since this kind of integrated analysis is not common and the methodology used not vigorously applied and tested, the findings and conclusions are only tentative and exploratory in nature. It is hoped that more research would be done in future using this integrated approach where economics could combine with other disciplines in order to produce a more balanced and realistic analysis.

CHAPTER TWO

THEORETICAL DESIRABILITY AND ECONOMIC JUSTIFICATION FOR AGRICULTURAL SUBSIDIES

1.0 INTRODUCTION

The issue of subsidies in general and agricultural subsidies in particular is highly controversial. There are many proponents for and against subsidies and there seems to be no general agreement as to which view is correct or acceptable. Subsidies, as a matter of public policy have been widely adopted in almost every country, both developed and developing for different reasons. Agricultural subsidies in particular stand out as one of the most controversial areas where subsidization policies have been employed.

Objective of Chapter

The object of this chapter is to survey and analyse the justification and rationale of the various types of agricultural subsidies and the criticisms against them. More specifically, this chapter will discuss the following :-

a) the need for government intervention in agriculture

b) distortions in agriculture and agricultural pricing policies

c) the definition and interpretation of subsidies

d) the rationale and justification of subsidies

e) the criticisms against subsidies

f) summary

2.0 GOVERNMENT INTERVENTION IN AGRICULTURE

The widespread interest and involvement of the state in agriculture is a universal phenomenon. The form and extent of state intervention varies from that of being highly supportive to that of being highly repressive against agriculture. The latter is visibly apparent in many LDCs while the former is common in the DCs. However, of late many LDCs have changed their policies in favour of agriculture and resorted to a policy of widespread subsidisation of their agricultural sector. This change in attitude may be attributed partly to the conviction of the state that it has a moral obligation to assist the poor and small farmers who happen to constitute the majority of the farm population of these countries, and particularly to the political pressure of the farm lobby. An additional explanation is that LDCs may be genuinely concerned about the state of their agriculture and that it should and could be the leading sector in their path toward the development of their countries, as was the case in Japan and many present developed countries. [1]

On the other hand, for the DCs, notably the EEC, USA and Japan, government intervention in agriculture has been mainly undertaken to support the strong agriculture lobby in order to stabilise farm incomes and to correct and rectify the perceived unfavourable terms of trade between agriculture and the non-agriculture sector. More often than not, through the policies adopted, the marginal and smaller farmers benefit relatively little or nothing at all while the bigger and richer farmers reap all the advantages and benefits. At the same time, these policies also cause havoc and disruptions to the economies of the LDCs, mainly through dumping and stiff tariff

against importation of agricultural products of the LDCs. [2]

But, whatever the outcome or implication of farm policies may be, it is a common attribute of the agricultural sector that it is of great importance to the state and hence inevitably highly politicised. A second common feature of the agricultural sector is that it faces a host of basic and fundamental problems that is not present in other sectors. These problems mainly revolves around the issues of demand, supply and resource allocation which interact in a dynamic setting to produce a sector which is highly volatile and unstable. [3]. This unique feature of agriculture reinforces the government's conviction that by intervening in it, it would hopefully be able to serve the best interest of the farming community and the economic stability of the nation, especially when agriculture is the main preoccupation of the majority of the people.

However, although the case for agricultural support and state intervention is well established, numerous criticisms have been formulated and advanced against this policy. This will be discussed more thoroughly in the final part of the chapter. The above introductory remarks have only served to give a backdrop towards our understanding and discussion of the controversial issues of agricultural subsidies.

3.0 AGRICULTURAL PRICING POLICIES

According to Hallet, the three most common intervention policies of the government in agriculture can be classified as pricing policy, structural policy and marketing policy. [4] We shall take up only the case of pricing policy which is an integral

part of the total development policy of a country and focus on agriculture. Agricultural pricing policy basically involves the taxation or subsidisation of agricultural commodities, for example through the granting of subsidies through price support or input subsidy. The effect of these measures would either favour or disfavour the production or consumption of specific commodities. And since commodities under government control or command is significant in the composition of a country's income, consumption and trade, the effect of these policies on the economy would certainly be great as it affects government revenue, welfare, the Balance of Payment, National Income and the rate of economic growth. [5]

In this regard, Tolley, et. al. [6] mentioned that among the most important objectives of agricultural pricing policies would include the following :-

a) to bring about certain income distribution deemed desirable by policy-makers

b) to provide incentives to farmers to increase production

c) to act as an instrument of stabilisation

d) to generate government revenue

e) as an instrument to speed up the process of economic development.

However, it should be noted that the above objectives need not necessarily be consistent with one another. For example, a policy of low domestic prices would benefit consumers and reduce cost of living but would lead to lower farm income. This would then have an undesirable effect upon farmers' incentive to produce which would then necessitate greater importation and heavier reliance on foreign sources. But, on the other hand, if farm prices are to increase and

at the same time consumer prices are to be kept low, then the whole programme cost would tremendously increase. Therefore, in the process of policy formulation, it is necessary to determine that the various policy objectives are consistent with one another and according to the priorities set by the state. If not, policy-makers would be faced with a difficult task to balance among objectives.

As a rule, LDCs' agricultural pricing policies have generally been used negatively because policies have been designed to lower the prices of food and other agricultural products while prices of manufactured goods have been increased. [7] Brown rightly pointed out that low food and other agricultural prices are politically popular because they increase the real income and employment of the urban poor. [8] A negative pricing policy imply that the terms of trade against agriculture is deliberately depressed and agriculture is discriminated. In fact evidence for this point is plentiful worldwide. Schultz, et. al. [9] have taken great pains to stress the damaging effects of the policies of distorting agriculture prices against the small farmers of the LDCs. This is not to imply that policies to lower food prices for consumers are bad but that measures taken to protect notably the poor urban consumers should not be at the expense of the peasant and their incentives to produce. Brown reiterated that there is a high cost attached to such low prices because their effect is to retard cost-reducing investment and innovation in agriculture. [10] In this connection, it would be informative to understand the justification for discriminating against agriculture. The argument is based upon the following assumptions about agriculture :- [11]

a) that aggregate agricultural production is price inelastic, i.e. production is not very responsive to price changes
b) that the chief beneficiaries of higher prices of agricultural products accrue mainly to the larger and richer farmers
c) that higher food and other agricultural-related prices such as clothing would affect low-income consumers badly, and
d) that manufacturing provides a more rapid means of growth and that achieving that growth is dependent upon large transfers of surplus in the form of income / profits and foreign exchange from agriculture to manufacturing.

Thus, the rationale goes that policies that deliberately depress agricultural prices and increase manufacturing prices will result both in more rapid economic growth and in more equitable distribution of income. However, low agricultural prices have, inter alia, affected farmers' incentives to produce and in the attempts to achieve self-sufficiency in food production, the above policy measures would have an unfavourable and counter-productive effect. Hence,to overcome this defect, many countries have switched to more positive pricing policies by increasing the relative prices of agriculture against non-agriculture prices. One very popular and widespreadly used method is through the use of agricultural subsidies. Hence, a positive agricultural pricing policy implies that agriculture is being subsidised.

Krishna outlined three benefits of having a positive agricultural pricing policy. [12] Firstly, it would be able to accelerate and encourage agricultural production. Secondly, it would be able to either encourage or discourage the production of specific

crops or to achieve the desirable crop-mix pattern. Thirdly, a positive pricing policy would enable the country to achieve an an adequate increase in food production and supply.

As a matter of fact, there have been a tendency for LDCs in the last 30 years to resort to policy measures to support agriculture through positive pricing policies which include the institution of a system of price guarantees and generous subsidisation of important agricultural inputs.

In this regard, it would be of interest to note the effects of a specific pricing policy on the agriculture sector. Basically, there are four effects. [13] Firstly, there is the production effect. For example, if farmers are responsive to price changes, then greater production is induced. Secondly, since agricultural pricing policy involves either taxation or subsidisation of commodities, the government either receives revenues or suffers losses in operating costs and since the commodities under government intervention is of great importance to the economy, the effect on government revenue or programme cost is great. Thirdly, it may affect income distribution through changing farm price, consumer price or farm income. For example, a high farm price policy will redistribute income to farmers while government release of food at low prices would lead to an increase in consumers' real income, or alternatively, an export tax depresses domestic price level and lowers farm income but raises the real income of consumers. Tolley, et. al. mentioned that whether pricing policy is regressive in its effect on income distribution would depend mainly on whether farmers or consumers who benefit from the policy represent the poorer sector

of the economy. [14] Finally, there is the effect on resource allocation where pricing policies can distort relative price structure among inputs which could lead to an increase or decrease in the production and consumption of a certain commodity.

In summary, we have established that LDCs have reverted their discriminatory policies against agriculture in favour of a positive pricing policy. Also in many LDCs, subsistence farming is less susceptible to influence of price incentives due to the " lower efficacy of the market mechanism ". Because of this, attempts to influence the pattern of investment and production through price incentives have often met with failures. In such cases a policy of direct government intervention through subsidies is thought more likely to succeed. [15] This kind of reasoning have been responsible for the existence of a plethora of subsidies in the agriculture sector of most LDCs.

4.0 DEFINITION AND INTERPRETATION OF SUBSIDIES

Introduction

Subsidies have come to be recognised and accepted as the most important and commonest fiscal instrument at the disposal of the government to achieve its multifold policy objectives. Its application is endemic and widespread in all areas of economic activities. Its scope is so wide-ranging and extensive and easy to implement that it is tempting for governments to resort to subsidies since the burden of the programme is borne fully by the state. The convenience and ease of applying this instrument has led to a plethora of subsidisation programmes in many countries and

established what some would call the phenomenon of the " subsidy morass ". However, subsidy tends to conjure a perjorative and negative connotation implying that the recipients, whether a state, firm or an individual, is dependent on the government for its operation and survival and thus considered inefficient and weak. This is especially so if recipients have been continuously dependent on it for a long time. However, the rationale of granting subsidies as argued below is formidable enough to justify its widespread application by the state.

Infant-Industry Argument For Subsidies

Subsidies constitute a form of protective policies. The case for protective policies such as subsidies as development strategy is not new or unique in the history of development planning. It has a long history in the economic literature and has a powerful theoretical basis called the Infant Industry Argument. (IIA) The IIA is the guiding principle of post-war industrialisation policy of LDCs. This idea of IIA was originally developed by a German economist called List. [16] List's theory was directly opposed to that of Ricardo who advocated free trade. List's theory was designed to justify the application of protective tariffs and subsidies to domestic industries which, in the early stages of development, could not compete with the more established foreign producers. In the course of time, local industries could become efficient and competitive enough, at which time the need for protection would be discarded. However, it is well known that the IIA has inherent weaknesses. Firstly, that the " infant may never

grow up " and secondly, that it may skew income and wealth distribution in favour of non-competing groups who derive quasi-rents and other forms of reward from their influential and privileged status. However, despite these weaknesses, subsidies continue to be popular among governments.

Definition of Subsidies

In this section we will survey some of the definitions that have been given about subsidies and then propose our own definition. Naturally, there is no single and comprehensive definition of subsidies. Bannock, et. al. defined subsidy as a payment made by the government to producers which is intended to make prices lower than they otherwise would be. This payment will, in general, have the effect of raising the income of recipients above the level it would otherwise have reached and at the same time increasing the real incomes of the buyers of the subsidised products. [17] What Bannock is referring to is actually output or producer subsidies. For example the padi price subsidy in Malaysia has the effect of increasing the incomes of padi farmers while maintaining consumer prices at the old level. Here, both consumers and producers benefit from this measure at the expense of the Treasury. This definition is however not complete. The World Bank gives a more comprehensive definition. It defines a subsidy expenditure as one which provides goods or services which could reasonably be expected to be provided by the private sector (including the recipients themselves) or which raises output prices or reduces input prices for private sector goods and services from their free market levels. From these

two definitions, it is clear that subsidies may be for inputs or output. As to the objective of a subsidy, the Encyclopaedia Britannica states that its purpose is to alter the results created by the free markets in a direction considered within the objective of public policy. Its effect is to encourage the growth of the subsidised industries at the expense of others by redirecting the use of public resources. [18] Hence through subsidies, numerous distortions are generated in the economy.

Goals of Subsidies

Subsidies vary in their form and goals and understanding this is useful in order for us to appreciate how it works. A useful framework to use to achieve this understanding is to use Musgrave's categories of allocation, distribution and stabilisation. Musgrave's category of allocation can further be broken down into a production and employment goal. [19] In relation to subsidies, production goal is concerned with output while employment goal is related with input.

In addition, the policy of extending subsidies is closely related to politics, notably to answer questions of who gets what,when and how. Invariably, this has to do with the question of distribution. In fact, subsidies are also dictated largely by distributional issues besides allocative issues as highlighted above. Hence, subsidy policies, like economic policies in general, would be better understood if the goal of " vote maximisation " and " politics of subsidisation " are also considered. [20] Vote maximisation varies from case to case, but from observation it can

be noticed that it varies in relation to the time of the next general elections. The dominance of this goal is particularly apparent when decision-makers are faced with the choice of allocation and distribution of limited public resources. Hence, from this broad goal of subsidy policies, it could be discerned that subsidies are used mainly for allocative and redistributive purposes.

Summary

Based on the above discussion, we can distinguish the following main features associated with subsidies :-

i) subsidies have both an allocative and redistributive function

ii) there are both input and output subsidies

iii) subsidies affect relative prices

iv) subsidies tend to distort the free market

Hence, in theory, subsidies can be manipulated by the government to achieve whatever objectives it deems suitable. Normally, subsidies are dispensed through various means. Among the more common means include direct cash transfers, tax concessions, cheap credit, governmental provision of goods and services at prices below normal market prices or governmental purchase of goods and services at prices above the market price. A simple typology of subsidies could therefore include product-price raising, input-cost reducing and direct income support.

5.0 PRINCIPLES OF SUBSIDISATION

Studies on subsidies benefit much from the literature on tax policies. Just as there are rules for efficient taxation principles, there also exist rules for efficient subsidisation. Andel mentioned four rules in order for efficient subsidisation to occur. [21]

a) principle of equal treatment of equal circumstance

This principle retorts that the government should act in a fair and just manner in its dealings with its citizens. It restricts the government from exercising its powers arbitrarily over its citizens. However, the realization of this principle depends upon two conditions. Firstly, that circumstances should also be equal. Unfortunately, in reality it is difficult to say when circumstances are similar or dissimilar. Secondly, although everybody agrees with this principle, yet certain groups in society would not hesitate to ask for favours to achieve some beneficial objective. In fact, one of the widespread criticisms of subsidies is due to the violation of this principle, especially between the rich and poor.

b) principle of differential treatment of different circumstances

This is related to the first principle and is another difficult one to realise in practice because a precise specification of circumstances is often difficult in individual cases, just as the determination of the " correct " progressivity of an income tax is difficult. To what degree for example must farmers' income in a particular region deviate from the national average to justify

granting it subsidies ? These are issues which are best handled by the decision-makers who are elected into power.

c) principle of avoiding excess burden

Public policies use and allocate resources of society. Allocation policies which are inefficient might result in welfare losses to society. Hence, the principle of avoiding excess burden or resource wastage demands that the subsidisation policies be achieved at least cost. Here " cost " is to be defined broadly including the amount of subsidy and any unwanted dislocation of consumption and production pattern induced by the subsidy.

d) principle of transparency

This principle requires that the subsidy programme, the conditions for receipt of subsidies and the effect of subsidies should be known. Only if the effects of a subsidy programme is known or estimable then the adequacy of a subsidy programme relative to given goals can be evaluated.

From this brief exposition, we are able to understand how subsidies ought to be administered in practice. If these principles could be followed strictly, then these programmes could be said to be administered efficiently and if not they are badly administered. The success or failure of a subsidy programme depends therefore on the extent to which these principles are violated.

Choice of Optimal Subsidy Form

Under normal circumstances, different kinds of subsidies are necessary to achieve different objectives. This is the premise which Andel used in ascertaining the choice of optimal subsidy form. [22] Andel mentioned that in order for a subsidy to be optimal it must have the following goals :-

a) preference for an explicit type of subsidy

The principle of transparency requires that subsidies should be of the explicit type rather than an implicit kind.

b) if the policy objective is to increase income

If the aim of a subsidy is to increase the income of a certain group of individual, then direct transfers would be better than subsidies. This is because in the case of subsidies, one cannot differentiate between the effects of an increase in factor prices, increase in profit, increase in real inputs and reduction in price of output. For example, a reduction in the price of output would benefit both the rich and poor buyers equally. In contrast, direct transfers to individuals can be given according to the personal circumstances of each recipient. Hence, such transfers would be more accurate in the distribution of benefits. Furthermore, the cost of attaining a given increase in income is much greater in the case of subsidies because it involve excess burden. However, if the goal of a subsidy is to increase profit through agricultural subsidies, then fixed subsidies (lump-sum subsidies) is preferable.

c) if the goal is to increase employment opportunities

Subsidies are often given to avoid or reduce unemployment in a specific region. According to Andel, a correct basis to use in granting subsidies should be towards labour cost. However, in most cases subsidies are given based on capital rather than labour cost. In this case it is possible that capital subsidies can cause a reduction in employment because they tend to utilise more capital. In addition, there would tend to be a simultaneous factor substitution against labour which is directly contrary to the original goal of employment creation.

d) if the goal is to increase production

If the goal of the subsidy is to increase production, then the correct basis for the subsidy would be the quantity of output, i.e. the more the quality produced the more subsidy one gets.

e) if the goal is to reduce dependence on foreign countries

This can be done by imposing tariffs on imports. However, whether tariffs are optimal instrument for accomplishing this is dubious because this might lead either to reduction in imports, reduction in domestic consumption, subsidisation of domestic production on the basis of the turnover and the subsidy is paid for by the users of the subsidised product. In fact, tariffs are more appropriate as an instrument for reducing the dependence on foreign countries on the grounds of national security. But from the point of view of distribution, it may have undesirable consequences. Hence, subsidies remain a preferable alternative.

However, the choice of an optimal subsidy form must be considered with respect to all goals and not one goal at a time. [23] Also the choice of optimal policy instrument is also affected to a large extent by policy costs, i.e. by costs of administration, collection and policy change. [24]

6.0 RATIONALE AND JUSTIFICATION FOR SUBSIDIES

Justification of Subsidies [25]

The conventional argument for a subsidy is the temporary " learning by doing " effects. The subsidised individual uses a subsidised input more intensively than he otherwise would, and this makes possible the adoption of modern inputs which would not otherwise be used. Once they have been adopted and costs are lowered, there is however no case for continuing the subsidy. As Sambrani aptly stated : " ..... subsidies are a created, administered device, intended for use only until such time as the basic robustness of the sector or activity can take up its own protection through its competitiveness; if this does not happen, the society at large cannot for all times protect it. To bring out the long-term competitiveness, certain structural changes in the economy may be essential. Subsidies ..... are meant primarily to provide the policy makers sufficient time to effect these institutional and structural transformations " [26] Hence, it is important to mention at the outset that subsidies can only be justified as a temporary measure.

Agricultural Subsidies

- Agricultural subsidies can be broadly categorised into two kinds, viz. input and output subsidies. Under this generic term, a diverse and wide ranging type of subsidy exist. A typical but by no means exhaustive sub-division can be of the following form :-

Input/Factor Subsidy	Output/Product Price Subsidy
Fertiliser	Price Support
Seed	Floor Prices
Pesticide	Guaranteed Minimum Price
Credit	Deficiency Payment
Irrigation Rates	Parity Prices
Transport	Forced Procurement
Loans	Price Subsidy

Basically, the objective of an agricultural subsidy is to increase the rate of return or compensation to agricultural factors above those that they would receive under conditions of free trade. Under these circumstances, agricultural subsidies would operate exactly as any other type of subsidy by changing the relative price of factors. [27] The most common arguments given in favour of agricultural subsidies are as follows :-

i) it is needed to maintain the income of the small farmer

ii) that the output of subsidised products will fall if the subsidies are removed

iii) to prevent a decline in the number of farmers and hence preventing the governmment from losing important rural votes

iv) to redress the imbalance between agriculture and the non-agriculture sector

In connection with this, Davidson [28] gave three major reasons why government initiates agricultural subsidies based on welfare, production, promotion of capital works and parity considerations.

As for welfare considerations, if farmers are a depressed section of the community, then their incomes must be below those of the rest of the community and it is the responsibility of the state to redress this imbalance. On reasons of production, most who argue that agricultural output is likely to decline unless farmers are given subsidies base their arguments on the low returns to capital received by farmers and hence this situation need to be rectified. On the other hand, subsidies in the form of capital invested in irrigation schemes have been justified because of their contribution in sustaining agricultural production and their stabilising influence during perods of drought. On parity grounds, it is argued that since the manufacturing sector always receive a lot of favoured treatment like tax incentives and protection, the agricultural lobby argue that they should also be given the same privileges. In addition to the above rationale, subsidies are also given as inducements for farmers to undertake risk, especially in the case of subsidies on " new inputs ".

In the section below, we shall deliberate more specifically on input and output subsidies and their relative merits and demerits.

7.0 INPUT SUBSIDIES

It is the quest of most LDCs to achieve as much food production as possible within the available resource-technology constraint that they possess in the agriculture sector. One influential school of thought believes that this could only be realised through the transformation of the rural and traditional mode of production. [29]

According to Idachaba, [30] there are two main types of

transformation that need to be undertaken to achieve the above objective. Firstly, increased agricultural production could be achieved through the reallocation of existing agricultural inputs. For example, new virgin land can be cleared using traditional inputs or cultural and management practices can be improved upon. Secondly structural transformation can be achieved through the introduction of new superior inputs that will have the potential to dramatically raise yields or prevent huge losses in yields.

Justification for Input Subsidies

It can be observed that both types of approaches have been used in many LDCs with varying success. The usage of traditional inputs have continued side by side with newer and better inputs. As regards to the use of new inputs, it is normal practice in many LDCs to subsidise the usage of these new inputs in agriculture. In his study of African agriculture, Idachaba hypothesised six reasons why input subsidies is widely subsidised in LDCs. [31]

Firstly, it is to help farmers bear a part of the adjustment cost of switching from traditional input package to a new input package. In the attempt to switch from using traditional to modern inputs, farmers go through a learning process and only they will only gradually approach the equilibrium values of production cost. In this process, it is widely feared among extension specialists that the learning process and the associated adjustment costs may dissuade farmers from actively adopting the new innovation. It is in this context that subsidies on new inputs attempt to minimise these learning and adjustment costs and thereby eventually persuading the

farmers to use these new inputs.

Secondly, there is a need to reduce the negative effects of uncertainties associated with an innovation. Farmers who have been using traditional inputs for years know the probability distribution of production coefficients of these inputs and are confident with its use. However, farmers who are at the margin of accepting new inputs are confronted with many types of risks and uncertainties and this lead them to discount prospective returns from these new inputs cautiously, a procedure which leads to smaller adoption of new inputs than would have been the case in the absence of risk and uncertainty.

Thirdly, input subsidies can be used to achieve a desired allocation pattern in agricultural production. This is possible because input subsidies are resource-specfic and can be purposefully used to achieve pre-determined factor proportions, substitutions and complementarities.

Fourthly, the economies of most LDCs is ridden with institutionally induced distortions that impose implicit and / or explicit taxes on farmers, e.g. import duties on agricultural inputs, artificially inflated costs of farm production, etc. These measures are usually undertaken because of many factors, e.g. to please the urban sector, existence of imperfect marketing and distribution system, etc. These distortions alter the equilibrium and marginality conditions otherwise attainable in a distortion-free world. Hence, farmers are granted input subsidies to compensate them for these taxes, especially when most of these distortions are taken as institutional realities.

Fifthly, there is the need to subsidise inputs because of the limited price competitiveness among major multinationals who are the main suppliers of inputs, e.g. fertilisers, pesticides, etc. If this is not done, then most of these inputs would be beyond the means of most farmers in LDCs because of the high price.

Finally, the subsidisation of inputs has to do with the irreversible relations in production. For example, in perennial crop cultivation, a government interested in building a long-run productive capacity would provide the initial incentives in the form of input subsidies (replanting grants, loans, etc.) to induce farmers to commit resources to what is essentially a long-term investment.

Hence, the presence of subsidised inputs will lower marginal cost of production and hence tend to shift the supply curve to the right. However, the extent to which marginal cost can be lowered by a subsidy depends upon the significance of this input in total cost of production. Further, the extent to which the usage of subsidised inputs will increase will depend on the price elasticity of demand for the input; where the lower the elasticity, the lower will be the increased usage of the input. And finally, the impact on production by the use of the subsidised input will depend on the elasticity of production with respect to the use of these inputs.

Hence, for all these reasons, input subsidies have been universally used in many LDCs. The successful transformation of the traditional mode of production through the adoption of new inputs by farmers have necessitated the liberal use of input subsidies. However, whether input subsidies have achieved the desired objective

or not has to be considered at the empirical level. This is one of the objective of the present study.

Fertiliser Subsidy

We shall now consider the classic case of the fertiliser subsidy. Fertiliser is an essential and important component in the input content of all crops. In fact, there is a high degree of correlation between the application of fertiliser and crop yields, the greater the application, the greater the yield and vice versa, assuming all other factors remain the same. Because of this it is not surprising that fertiliser has been one of the most heavily subsidised input items in agriculture. According to Dalrymple [32] the purpose of a fertiliser subsidy is :-

i) to encourage farmers to use fertilisers and therefore expand their total production

ii) to help farmers maintain fertiliser use in cases where product prices have not been raised or raised correspondingly,

iii) to help expand total domestic market for fertilisers and make the establishment of fertiliser manufacturing and distribution facilities economical

iv) to help increase food production.

- Therefore since the use of chemical fertiliser as a complementary input in the package recommended under the Green Revolution is important, it is necessary for governments to initiate fertiliser subsidies. However, the use of fertiliser does not necessarily imply an automatic increase in output. Besides questions of correct application and other matters relating to the technical

aspects of fertiliser usage, it also depends on the economics of fertiliser application. According to Tolley, et. al. [33] the extent of response of output to fertiliser subsidy depends on the following factors :-

i) it relies on farmers' incremental demand for fertiliser induced by the subsidy

ii) it depends on the contribution to output of fertiliser and substitutability of fertiliser for other inputs

iii) it depends critically on timely availability of fertiliser and other inputs, especially water.

Among the main advantages of a fertiliser subsidy are the positive effect on crop production, export, production and income. In addition, it prevents the raising of food and raw material prices which would have adverse consequences for the industrial sector. Another strong point for fertiliser subsidy is that it is less costly to the government than product price subsidies and more easily reduced than price supports. However, there are also some shortcomings of fertiliser subsidies :- [34]

i) where improved inputs are unfamiliar to peasants, their price may be less important than the product price.

ii) it covers only part of the total cost of production and do not provide an insurance against downward fluctuations in price

iii) it covers only part of the cost of several purchased inputs

iv) input price manipulation cannot discriminate between products or income groups of users

v) it is potentially a high budget cost to the government, especially if the subsidies are carried beyond the initial adoption

period

vi) if the subsidy is applied to imports, it may discourage the development of the local fertiliser industry

vii) it may encourage the uneconomic use of fertilisers. For example, they may be used at the wrongtime, in the wrong amounts or on the wrong crops. Hence, it may lead to an inefficient choice of cropping patterns.

viii) the subsidy may never reach the farmers, or at least the small farmers. Therefore, if the subsidy is designed mainly as an income transfer, it is both inefficient and inequitable because it also benefits the richer farmers.

Having discussed the significance of fertiliser subsidy and its drawbacks, it would be worthwhile to analyse the obverse situation without fertiliser subsidy, that is to analyse the effect of an increase in fertiliser price to the farmers (either through the removal of the subsidy or a reduction in the amount of subsidy). Dalrymple noted that some undesirable effects would follow if fertiliser subsidy were to be abolished. [35] Firstly, the amount of fertiliser applied might fall. This is true for small farmers with limited financial resources because they have great difficulty in securing credit to buy fertilisers and other inputs as compared to the richer and bigger farmers. A second possible outcome is a change in the pattern of crop utilisation because there is a great tendency for fertilisers to attach to crops which give higher returns rather than crops which give lower returns, for example cheap staples like rice. An undesirable effect arising from this would be a rise in the price of food to consumers reflecting both a

higher input cost and lower yield due to lower level of fertiliser usage.

Summary

Fertiliser subsidies have been instituted in order for farmers to increase their level of fertiliser utilisation in order to enhance their production. This is important because most of the HYV are dependent upon chemical fertilisers. However, despite various advantages associated with fertiliser subsidies, there are also some negative forces at work against fertiliser subsidies.

8.0 OUTPUT SUBSIDIES

Introduction

Product price subsidy or more commonly known as price support is another important form of agricultural subsidy utilised in LDCs. It refers to the provision of a price to farmers which on average is higher than that in the market. In LDCs, it is more accurate to use the term price subsidy rather than price support since it involves the acquisition of crops by the government at farm-gate prices at harvesting time at a price which is above minimum incentive levels. This price level is usually set administratively. Price support is usually intended to complement the policy of input subsidies.

Johnson believes that just like the advanced countries, LDCs could face many difficulties in operating price subsidies. This is especially true if the support price which is set too high would lead to great production response from producers and would lead to storage and management problems beyond the control of the bureacracy to handle. However, he believes that if the policy is moderately implemented, the situation of greater price certainty thus created would be able to induce farmers to produce mainly for the market rather than remaining a subsistence producer. [36]

Price Support in Developed Countries

Almost all DCs use price support measures to protect and stabilise income of producers in the presence of surplus production. For example, in the United States, farm support programmes are designed to maintain prices of farm products like wheat, corn and cotton at levels sufficient to maintain a parity relationship

between farm prices in the economy. If the market price for these products is below the official support price, then the government lends the farmer an amount equal to the difference of the two prices. If the market price rises above the support price, farmers will retain the crops and sells it and repays the loan. But when the market price is below the support price, the government buys the produce of the farmers. Here storage and disposal of the surplus production becomes a costly undertaking to the government. Since price support programmes encourage surplus production, it is usually supplemented by production controls and quotas and other devices to off-set the above undesirable effects. Price support policies are preferable if output is to be restricted because it provides a way to police strict observance of restriction measure. Under price support programme, the market price can be lower than the support price as long as government accumulates stocks, or is reselling at a loss. The government may both accumulate stocks and sell enough on the market to assure that market price stays well below the support price. The difference in price induces farmers to enter the support programme, selling their produce to government rather than on the market.

Price Subsidies in LDCs

In LDCs, output subsidies are more straight forward and less complicated than price support system as practiced in the DCs. In addition, price subsidies are instituted to stimulate production rather than to prevent surpluses. In fact price subsidies in LDCs are formulated on the basis that farmers are responsive to prices.

Tolley et. al. observed that three factors can account for the effectiveness of a price support programme in LDCs. [37] Firstly, the output response would depend on whether the support price is set at a level that would provide farmers incentives to invest in modern inputs. Secondly, that the price is announced well ahead of the season and that all farmers are aware of it and that the government buys all that is offered at the minimum price offered. Thirdly, the output response would depend on the price elasticity of supply which in turn depends on the timely availability of farm inputs. The elasticity is likely to be larger if the time under consideration is longer.

In LDCs, relative product prices vary sharply between different countries. In some countries product prices are held below world market levels in order to keep consumer prices at artificially low levels while in other cases prices are supported above world market levels. For example, Malaysia belonged to the latter category because it is a high cost producer of rice and the government controls rice import and set producer prices at a level higher than world prices.

According to Dalrymple, price subsidies have certain advantages over input subsidies as follows. [38] Firstly, it is widely recognised and familiar to all farmers except for self-sufficient and non-market farms. Secondly, a rise in price, due to the cushion it provides, reduces danger from a downward price fluctuations. Thirdly, a price rise rewards the increased usage of an array of inputs and fourthly, an adjustment can be easily applied to a specific type. Because of these inherent advantages, many LDCs

resort to price subsidies in addition to input subsidies.

However, price subsidies also suffer from many operational difficulties. [39] One main defect relates to the beneficiary . For example, an increase in product price may benefit a farmer who produces a consistently higher yield more than a farmer with lower yields. The latter are usually the richer and bigger farmers. This would therefore encourage the richer farmers to increase their yield by applying more fertilisers while the poorer farmers may not have this capacity. Hence, richer farmers tend to benefit more from this policy. In addition, there is a lack of linkage to specific inputs, i.e. all farmers will benefit from this policy irrespective of whether he is an innovator or not. Furthermore there is no guarantee that the desired increase in output will be attainable. There is also the practical and political limits as to how far product prices could be adjusted to offset an increase in fertiliser prices if price subsidies were the only policy implemented. But the most problematic is the fact that it is politically difficult to reduce price support once it has been started and hence government cost would be enormous.

9.0 COMBINED INPUT AND OUTPUT SUBSIDIES

In most LDCs, it is common for both input and output subsidies to be implemented together rather than using one at the expense of the other. In fact the practicality of a joint policy far outweigh that of an exclusive policy although in terms of resource cost it would be considerable. Both policies are needed as complementary instruments for different reasons. In fact, there has been concrete

suggestions for a joint price policy programme as mentioned by Dalrymple. [40]

We illustrate below the effect of input and output subsidies using simple demand and supply diagrams. [41]

Here, the following assumptions are made :-

i) that there are no imports

ii) that all government purchases and sales occur in the same period

iii) that demand price measures the value of the commodity to consumers and supply price measures cost to suppliers.

Fig. 2.1 shows the effect of input and output subsidies. Fig. 2.1(i) shows a price support policy designed to raise production. SS is short-run supply curve and DD is demand curve for farm output. Supply curve slopes upwards reflecting increased costs faced by farmers when he increased his production in the short-run. With no government intervention and no imports, OPm is the market price and OQm is the quantity produced.

In order to increase output by OQ1 (ie. by the amount QmQ1), price need to be supported at OP1. However, it can only be sold at price OPo at unit subsidy PoP1. The total cost of this subsidy programme to the government is PoP1CB. In order to calculate the resource cost of the above policy, we can do so by deducting changes in the producer and consumer surplus from government cost, where,

Producer surplus = PmP1CR

Consumer surplus = PmPoBR

Government cost = PoP1CB.

Netting both the consumer and producer surplus from government cost

gives RCB as the deadweight loss. Note that further increase in the support price to OP2 will raise programme cost to P3P2GF, i.e. any further increase in price imply higher governmental cost and vice versa, other things being equal. Hence, the resource cost will increase by BCGF. From this it is clear that resource cost of price support policy to the government is high.

Fig. 2.1(ii) illustrates a fertiliser subsidy, where,

Df = farmers' demand curve for fertiliser

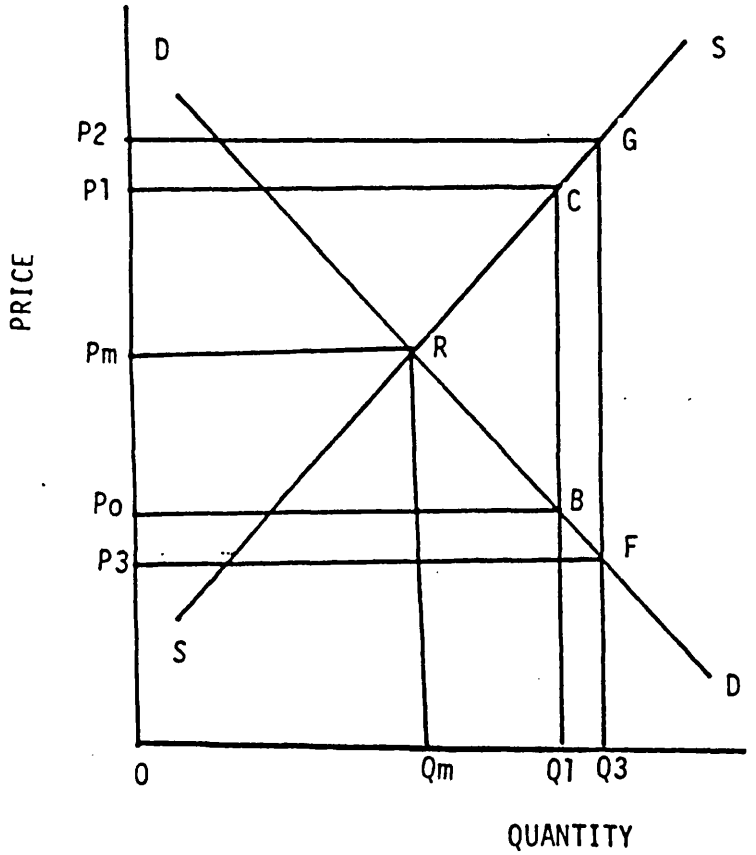
Pf = world price of fertiliser

$\bar{P}f$ = subsidised price of fertiliser

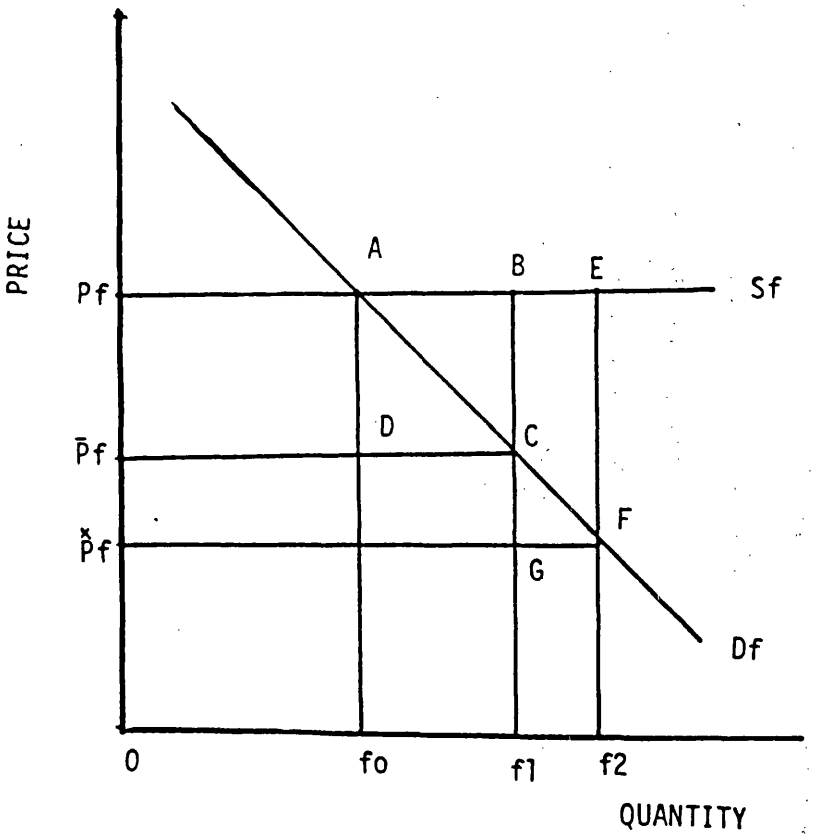
Sf = supply of fertilisers assumed perfectly elastic at PF

$Pf\bar{P}f$ = per unit subsidy - encourages additional fertiliser demand of FoFl from free market level of OFo.

Government cost from subsidy rate $Pf\bar{P}f$ = $Pf\bar{P}fCB$. An increase in unit subsidy by $Pf\bar{P}f$ would increase cost by $Pf\bar{P}fFECB$. Hence, the the higher the existing level of subsidy, the higher is the incremental cost to the government, other things remaining the same. At the subsidised price of $\bar{P}f$, $Pf\bar{P}fAC$ is transfered to the producers. The government cost is PfPfBC. Netting this transfer from the government cost gives ABC as the deadweight loss. A further reduction in fertiliser price to $O\bar{P}f$ will raise the resource cost by -FEGB. Therefore, the effectiveness of a fertiliser subsidy depends, among other things, on the elasticity of output supply with respect to fertiliser price.



(i) A PRICE SUPPORT POLICY



(ii) A FERTILISER SUBSIDY POLICY

Fig. 2.1: EFFECT OF INPUT AND OUTPUT SUBSIDIES

Price Support versus Input Subsidy : Which is Better ?

From the above discussion, it is obvious that both input and output subsidies are important in that they complement each other. However, in terms of resource cost both measures would be a drain on the government budget. Hence the question to pose is, which one is more efficient ? Many studies have been done to provide the empirical answer to this and it would be worthwhile to review the findings of some studies on this matter.

Barker and Hayami [42] developed a simple demand-supply model to compare in a limited context the benefits and costs associated with alternative rice support and fertiliser-subsidy programme to achieve self-sufficiency in the Philippines. Their results show that a fertiliser subsidy to the rice sector requires less cost to the government for achieving self-sufficiency and that it is more efficient than price support in terms of cost-benefit ratio.

Ahmed [43] did a similar study for Bangladesh using the above methodology to determine the relative efficiency of price support versus fertiliser subsidy policies to increase rice production. He came to the same conclusion as Hayami of the relative superiority of fertiliser subsidy over price support. His result showed that although total social benefit is substantially large under both programmes but the net social benefit is negative for price support. Further, price support seemed to be more expensive to the government than fertiliser subsidy. In addition, fertiliser subsidy tends to be more egalitarian than price support policy. According to Tolley, et. al. [1982, p. 158], the reason for the

positive net social benefit for fertiliser subsidy is due to the presence of suboptimality in the fertiliser (factor) market when the subsidy was introduced.

Tolley et. al. [44] also considered the question which of the two policies is more effective according to the criteria of national welfare and government cost and applied a model to calculate the effects. Using data for Bangladesh in 1970-79, they discovered that there was a tendency for a lower incremental resource cost under price support. However, they were careful to caution that different conclusions regarding the relative merits of changing the support price or the input subsidy could be arrived at. Hence, the results were inconclusive.

Rai [45] attempted to analyse the programmes of price support and fertiliser subsidy for achieving self-sufficiency in wheat production in India. The criteria used to evaluate these two policies were :-

i) government cost to the programme
ii) the efficiency of the programme
iii) the distribution of benefits, and
iv) foreign exchange savings

The study found that fertiliser subsidies were more effective in achieving food self-sufficiency than price support.

Parish and Mclaren [46] said that according to conventional wisdom, an output subsidy would be more efficient than an input subsidy as a means of encouraging the production of an output. In their paper, they claimed that there is a possibility of an input subsidy being more efficient than an output subsidy. In fact the

principal question that they addressed in their paper concerns the circumstances under an input subsidy would cost less than an output subsidy to achieve a given expansion in output. This implied that they favour input subsidy over output subsidy as a policy instrument.

Krishna [47] believed that input subsidy is preferable to price support if the objective is to increase agricultural output. He gave the following reasons to support his contention :-

i) if product prices are raised, farmers may or may not improve their cultivation techniques but instead they may spend the extra income on consumption and hence government expenditure would be wasted.

ii) if inputs are subsidised, the benefit of government investment can be derived by farmers only in proportion to their use of the improved inputs.

iii) input subsidies avoids the raising food and raw material prices against the growing industrial sector.

However, Krishna said that there are many practical reasons why price support is needed in addition to input subsidies, although the latter may be preferable a priori. [48] Firstly, if the improved inputs are unfamiliar to the farmers, they are not likely to be very sensitive to changes in their prices. And even when they are familiar, its absorption depends on whether the cost of employing them (in addition to the cost of traditional inputs) is covered by the product prices. Secondly, the assurance that farmers need urgently is insurance against downward fluctuations in product prices rather than upward fluctuations in the cost of purchased

inputs which form only a small part of the total cost. Thirdly, product price guarantees induce the better use of traditional as well as new inputs, whereas input price subsidies can cover only the purchased new inputs. Fourthly, price support encourages more production because the more the farmer sells the more they earn. Fifthly, input price manipulation cannot discriminate between products while product price guarantees can be used to induce changes in output of specific crops.

However, Krishna warned that although it is true that input subsidy avoids an immediate increase in food and raw material prices, this will not prevent a long-run steep increase in their prices if input subsidisation does not succeed in increasing agricultural output at the same rate as price support would be. What it means is that input subsidisation may seem cheaper than product price support in the short run, but price support may prove to be cheaper in the long run.

Summary

We have seen that input and output subsidies are common policy instruments of many LDCs. There are both advantages and disadvantages associated with either input or output subsidy. The question for LDCs which have limited resources is which of the two subsidies is more efficient in achieving the objective of increasing food production. Although there have been many studies done on this area, the results have still been inconclusive and hence LDCs have attempted to use both to achieve different goals.

10.0 CRITIQUES OF FARM SUBSIDIES

Introduction

There have been a great many criticisms from economists of the negative aspect of farm subsidies. It is indeed felt that farm subsidies have been carried too far and bear a heavy burden on the budget of the affected countries. This state of affairs is most serious to LDCs because the agriculture sector is burdening the economy through inefficient subsidies rather than playing a leading role. Hence, there is a need for a review and a rethink of the system of agricultural subsidies. We shall highlight some of the strong arguments advocated against farm subsidies.

Wilson [49] mentioned three standard arguments against farm subsidies. Firstly, that subsidies, like any other forms of protection, is against the laws of comparative advantage and hence misuses alloaction. For example, when a country subsidises the production of a crop which it can import more cheaply from abroad, it is in fact misusing resources which could be better utilised elsewhere in the economy. This argument applies both within a country and across boundaries. It therefore argues for a system of free trade which is thought to be the best way to optimise resource allocation. Secondly, that subsidies tend to distort production pattern within agriculture. The huge grain mountain of the EEC and overflowing surplus of wheat production in the United States are classic examples of distortions in production practices which is a direct result of farm subsidy policies. In this paradoxical situation, farmers are paid subsidies to discourage production. Thirdly, since agriculture is a low profit-making industry, there is

a prima facie case of discouraging further investments in it since unprofitable industries do not make good investments. But most governments in practice act otherwise by giving generous assistance to agriculture. One explanation for the widespread occurrence of this phenomenon in the DCs is the presence of strong agricultural lobbies while in the LDCs the government is trying to win the votes of the rural people who form the majority of the population.

Another common argument forwarded against farm subsidies has strong emotive appeal. It simply states that once subsidies are introduced they tend to perpetuate themselves and any attempt made to reduce, phase, terminate or even review them would be opposed by the subsidy lobbies. As we have analysed that subsidies are only justified when they are temporary and once they have achieved their objectives there is no more case for subsidisation. What policy-makers fear is that the subsidies which are originally intended as a temporary interim measure has now assumed a permanent form. Prest [50] echoed the same sentiment when he said: " ..... A well known danger is the likelihood that subsidies become irremovable .... Another is that subsidies may be self-perpetuating ..... Yet another is that civil servants and their departments may themselves come to have a strong element of self-interest in perpetuating such payments ". In fact Prest believed that the reasons for " bad " subsidies can be attributed to two possible explanations, viz. to an incomplete economic analysis and secondly to the subordination of subsidies to alleged higher ends, whether political (vote-catching) or economic (stabilise prices whatever the cost). For this reason, many people have cautioned against the introduction of new

subsidies. In fact the United States and other developed countries like those of the EEC are taking halting steps to reduce subsidies to their farmers. [51]

Another criticism which is widely quoted is that farm subsidies are inefficient and waste resources and that some of the resources that is used for subsidies could be better utilised elsewhere in the economy. As Self and Storing [52] said that although state aid to agriculture would lead to improvement of farm efficiency and income, "..... it may still be open to the objection that it is absorbing resources .... which could be better utilised in other sectors of the economy ". In fact, Body [53] argued that the effect of massive support and subsidies to agriculture in Britain after the Second World War has been to divert resources away from other industries and services " into the production of unwanted quantities of expensive food on land that is often unsuitable for growing it". McCrone [54] in his classic study on agricultural subsidies in Britain declared that ".... there is no good economic reason for paying costly subsidies to British agriculture either to maintain output at a high level or to encourage further expansion ".

However, the most critical attack on farm subsidies is the fact that it benefits mainly larger and richer farmers more than the smaller and marginal farmers. A considerable amount of evidence has been accumulated to support this contention. Brown [55] in his studies of input subsidies and its effect on income distribution in LDCs discovered that farm subsidies benefited mainly middle and upper-income farmers since large scale farmers were the ones who can afford to buy most subsidised input and poorer farmers cannot get

access to inputs since they lack the financial means to do so. Davidson [56] argued that in Australia it is large farmers who receive the largest share while the small farmer with the lowest production received the least subsidy. Boulding [57] in a particularly critical statement said that " .... political pressure has produced subsidies toward agriculture in all societies, but where these subsidies tend to have gone to the rich farmers and have tended, if anything, to drive the poorer farmers out of agriculture altogether. This is particularly noticeable in the United States where agriculture subsidies takes the form of price supports, which inevitably subsidise the richer farmers, as it is the richer farmer who has more to sell .....". Self and Storing [58] focussing on the United Kingdom said that since price guarantees ignore the circumstances of individual farms and farmers, the largest amount of aid went to successful farmers, while the poorest farmers got the least. They further stated that irrespective of what the state did, the larger farmers will continue to increase both their output and efficiency but that smaller farmers need help to overcome their intrinsic disadvantages ". Islam [59] in his study on Bangladsh agriculture discovered that larger farmers did have easier access to irrigation which is heavily subsidised by the government. He concluded that the richer farmers are likely to get a disproportionate share of the benefits from the subsidy on irrigation. Thus, he said, " .... it is clear that the subsidy on foodgrains and agricultural inputs does not have any positive distribution implications .... the subsidy on inputs is possibly benefiting the richer farmers disproportionately ". On the other

hand, Wilson [60] a political scientist noted that in the United States and Britain, farm subsidies tend to benefit the rich. To quote him : ".... The tragedy is that while rural poverty has often been used to justify the enormously expensive farm subsidy policies of Britain and the United States, very little of this had benefited the rural poor or farmers with low incomes in both countries and have gone primarily to farmers who enjoy incomes above the national average ". This point is supported by Schultze who argued that the main effect of farm subsidies has been to raise the price of farm land, again benefiting mainly the rich while the poorest have benefited little. [61]

11.0 SUMMARY

It is therefore clear from the argument and evidence presented above that farm subsidies, despite being a very popular policy has come under heavy criticisms from many quarters for not bringing about the equitable effect it is supposed to have. Most people urge that farm subsidies should be constantly reviewed and that subsidies should be used selectively and not indiscriminately as is being done in many countries today. Some have even suggested that there is a dire need to set up appraisal criteria to decide which methods of subsidisation makes most sense. It is therefore up to the policy-makers to decide on the most appropriate course of action to take after considering all alternative courses of action.

NOTES

1. World Bank (1982), World Development Report, Oxford University Press, p. 32

2. The Economist, December 11, 1982, p. 18 stated that " .... the real victims of American agricultural policy are in the Third World .....", while The Economist, February, 1985, p. 14 stated that ".... Rich countries should stop subsidising their own farmers. By dumping their subsidised food surpluses on countries like Egypt, the US and the EEC have done great harm. This dumping has allowed government to keep the price of foodstuffs for the urban proletariat so cheap that native farmers are ruined ".

3. E.C. Bishop (1982), An Analysis of and Farmer Response to State Supported Aids available in British Agriculture, M. Litt. thesis, University of Oxford, Part I

4. G. Hallet (1981), The Economics of Agricultural Policy, 2nd edition, Basil Blackwell, Oxford, p. 7

5. Among the empirical studies conducted by economists on agricultural pricing policies are as follows : G. Tolley, V. Thomas & C.M. Wong (1982), Agricultural Price Policies and the Developing Countries, The Johns Hopkins University Press; M.D. Bale & E. Lutz (1980), " Price Distortions in Agriculture and their Effects : An International Comparision ", American Journal of Agricultural Economics, Vol. 63 (1); T. Betrand (1980), " Thailand: Case Study of Agricultural Input and Output Pricing ", World Bank Staff Working Paper, No. 385, April; W.L. Peterson (1979), " International Farm Policies and the Social Cost of Cheap Food Policies ", American Journal of Agricultural Economics, Vol. 61

6. G. Tolley, et. al. (1982), ibid., pp. 2 - 4

7. R. Krishna (1973), " Agricultural Price Policy and Economic Development" in H.M. Southworth & B. Johnston (eds), Agricultural Development and Economic Growth, Cornell University Press, Ithaca, pp. 498-500 and other studies quoted in notes (5) above

8. G.T. Brown (1983), " Agricultural Pricing Policies and Income Distribution ", in G.M. Meier (ed) (1983), Pricing Policy for Development Management, The Johns Hopkins University Press, pp. 100-102

9. T.W. Schultz (ed) (1978), Distortions of Agricultural Incentives, Bloomington, Indiana University Press.

10. G.T. Brown (1983), ibid., p. 100

11. G.T. Brown (1983), ibid., p. 73

12. R. Krishna (1973), ibid., p. 503

13. G. Tolley, et. al. (1982), op. cit., pp. 5 - 7

14. G. Tolley, et. al. (1982), op. cit., p. 5.

15. E. Eshag (1983), Fiscal and Monetary Policies and Problems in Developing Countries, Cambridge University Press, pp. 11-12

16. F. List (1966), The National System of Political Economy, Augustus M. Kelley Publishers, New York.

17. G. Bannock, R.E. Baxte & R. Rees (1985), Dictionary of Economics, Penguin Books, 3rd edition, p. 418.

18. Encyclopaedia Britannica (1975), " Subsidies ", 15th edition, William Benton & Helen Hemingway Benton, pp. 753-755.

19. N. Andel (1976), " The Choice of Subsidy Form " in M. Pfaff (ed), Grants and Exchange, North Holland, p. 433

20. A. Downs (1957), An Economic Theory of Democracy, Harper & Row, Part II, Chapter 10, pp. 164-204.

21. N. Andel (1976), op. cit., pp. 436-440.

22. N. Andel (1976), op. cit., pp. 436-437.

23. Comments by P. Bohm of N. Andel's article , " The Choice of Subsidy Form " in M. Pfaff (ed) (1976), ibid, pp. 445-446.

24. Comments by P. Bohm on N. Andel's article, pp. 445-446.

25. For a fuller account of the rationale for general subsidies see A.R. Prest (1974), op. cit.; L. Rosenthal (1983),ibid.

26. S. Sambrani (1982), " Rapporteurs' Report on Subsidy as an Instrument for Increasing Agricultural Production and Income ", Indian Journal of Agricultural Economics, Vol. 37 (3), p. 293

27. B.R. Davidson (1969), " Is There a Case for Agricultural Subsidies? " Farm Policy, Vol. 8 (4), p. 107, Nedlands, Western Australia.

28. B.R. Davidson (1969), ibid., pp. 109-115.

29. T.W. Schultz (1964), Transforming Traditional Agriculture, Yale University Press.

30. F.S. Idachaba (1977), " Pesticide Input Subsidies in African Agriculture: The Nigerian Experience ", Canadian Journal of Agricultural Economics, Vol. 23 (2), p. 88.

31. F.S. Idachaba (1977), ibid., pp. 89-93

32. D.G. Dalrymple (1975), Evaluating Fertiliser Subsidies in Developing Countries, Office of Policy Development and Analysis, Bureau for Program and Policy Coordination, USAID, Washington D.C., p. 2.

33. G. Tolley et. al. (1982), op. cit., pp. 68 - 69.

34. D.G. Dalrymple (1975) in G.M. Meier (ed) (1983), ibid, pp. 223-224. However, a study in Indonesia found that fertiliser subsidy is indispensable to achieve food self-sufficiency. See M. Ali Sastrohoetomo (1982), " Analisa Kebijaksanaan Subsidi Pupuk " Ekonomi dan Keuangan Indonesia, Vol. 30 (4), Disember.

35. D.G. Dalrymple (1975) in G.M. Meire (ed) (1983), op. cit. p. 224.

36. D.G. Johnson (1973), Comments on R. Krishna's article in H.M. Southworth & B. Johnston (eds), ibid., p. 547.

37. G. Tolley, et. al. (1982), op. cit., pp. 64-65.

38. D.G. Dalrymple (1975), op. cit., p. 224.

39. D.G. Dalrymple (1975), op. cit., pp. 224-225.

40. D.G. Dalrymple (1975), op. cit., p. 225.

41. Adapted from G. Tolley, et. al. (1982), op. cit., pp. 140-44.

42. R. Barker & Y. Hayami (1976), " Price Support Versus Input Subsidy for Food Self-Sufficiency in Developing Countries ", American Journal of Agricultural Economics, Vol. 58 (4).

43. Raisuddin Ahmed (1978), " Price Support Versus Fertiliser Subsidy for Increasing Rice Production in Bangladesh ", Bangladesh Development Studies, Vol. 6 (2).

44. G. Tolley, et. al. (1982), op. cit., Chapter 7, pp. 139-162.

45. K.N. Rai, S. Niwas & B.S. Panghal (1982), " Price Support versus Input Subsidy For Achieving Self-Sufficiency in Wheat Production in India ", Indian Journal of Agricultural Economics, Vol, 37 (3), p. 281.

46. R. Parish & K. Mclaren (1982), " Relative Cost-Effectiveness of Input and Output Subsidies ", Australian Journal of Agricultural Economics, Vol. 26 (1).

47. R. Krishna (1973), op. cit.,pp. 526-527.

48. R. Krishna (1973), op. cit., p. 537.

49. G.K. Wilson (1977), Special Interests and Policy-Making: Agricultural Policies and Politics in Britain and the USA, 1956-70, John Wiley & Sons, p.3.

50. A.R. Prest (1974), How Much Subsidy ? Institute of Economic Affiars, Research Monograph No. 32, pp. 36-37.

51. In fact this problem is so serious that the Reagan Administration is determined to cut down the extent to which it subsidises farming drastically, as was reported in The Sunday Times, December 30, 1984.

52. P. Self & H. Storing (1971), The State and the Farmer, George Allen & Unwin Limited, London, p. 27.

53. R. Body (1983), Agriculture: The Triumph and the Shame, Temple Smith, London, pp. 19-37 & backcover caption.

54. G. McCrone (1962), The Economics of Subsidising Agriculture: A Study of British Policy, George Allen & Unwin Limited, p. 173.

55. G.T. Brown (1983), op. cit., p. 102.

56. B.R. Davidson (1969), op. cit., p. 109.

57. K.E. Boulding, " Equity and Distribution ", in M. Pfaff (ed) (1976), op. cit., p. 15.

58. P. Self & H. Storing (1971), ibid., pp. 34-35.

59. Razwanul Islam (1980), " Foodgrain Procurement, Input Subsidy and the Public Food Distribution System in Bangladesh : An Analysis of the Policy Package ", Bangladesh Development Studies, Vol. 8 (1/2), p. 112.

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61. C.L. Schultze (1971), The Distribution of Farm Subsidies : Who Gets the Benefits, Brookings Institution Staff Papers, Washington DC, pp. 31-36.

CHAPTER THREE

IMPACT OF SUBSIDIES ON AGRICULTURAL DEVELOPMENT: A REVIEW OF THE LITERATURE

1.0 INTRODUCTION

In the previous chapter, we have already analysed and discussed the rationale and economic justification of subsidies in general and agricultural subsidies in particular. We found that there were indeed some very sound economic grounds for the granting of subsidies. In this chapter, we shall probe the issue of subsidies further with a focus on an analysis of its impact.

A survey of the studies done on the impact of subsidies in the literature reveals that much attention has been concentrated in the field of agricultural pricing policies. [1] Our objective in this chapter is to highlight what the literature reveals about the impact of input and output subsidies and to outline some of the significant findings from these studies. We shall then attempt to investigate certain aspects of the implication of agricultural subsidies in the LDCs. This will form the basis of our empirical chapters where we will formulate certain hypothesis which will then be investigated in the field work.

- We will discuss the issue of the impact of subsidies as follows. Realizing that a generalisation of the effect of subsidy policies would have less practical utility from a micro-policy perspective we will attempt to analyse the impact of subsidies under the following categories :-

i) its impact on resource allocation

ii) its impact on the distribution of benefits

iii) its impact on labour supply and the supply response of farmers

2.0 SUBSIDIES AND RESOURCE ALLOCATION

Subsidies form a significant proportion of total government budgetary outlays and hence its influence on resource allocation is substantial. The problem of resource allocation is important because of its implications to public policy. George and Shorey [2] observed that : " .... the problem arises because resources are scarce which makes it essential that they be both fully and efficiently employed. If they are not, the potential of the economic system to generate welfare cannot be fully realised. " And since governmental outlays and its total resources are limited, the amount that the government is willing to allocate towards subsidies would also be limited and subject to very strict considerations or qualifying criteria. It is in this regard that policy-makers are faced with the difficult and sensitive question of choosing among alternative uses of subsidies, for example, whether subsidies should go to agriculture or non-agriculture activities and in what proportion. Hence, it is crucial to have a clear and objective set of criteria on which to base policy decisions. It is in this context that resource allocation is one of the most important, though by no means the only criterion. It involves the satisfaction of the condition of optimality and maximisation of utility through efficient resource use and secondly the question of individual benefits and community welfare. [3] To quote George and Shorey :

" The analysis of resource allocation is thus concerned with identifying the most efficient production and distribution pattern and with establishing the kinds of decisions that lead to the achievement of maximum efficiency .... " . Therefore, in considering the effects of reallocation of resources, both equity and efficiency considerations must be taken into account since, " ..... efficiency consideration alone cannot indicate the nature of a welfare optimum nor justify a change in the allocation of resources ..... ". [4]

Allocative Effect of Subsidies

We shall now look at the theoretical considerations of the impact of subsidies on resource allocation and its effect on welfare. In this section, we are concerned with efficiency issues while equity considerations will be analysed in the next section.

Much of the literature on the welfare effect of subsidies seem to suggest that subsidy policies often lead to welfare losses. These are mainly attributed to distortions that are generated in the economy which result in extensive deadweight losses. Many explanations and proof of this proposition use the concept of " economic surplus " to prove their case. [5]

The concept of " economic surplus " is a simple and straightforward notion in that every consumer or producer gets out of any transaction something extra and additional to that what he has paid. This situation is likely to be true because he enters into a transaction on his own free will rather than being forced to do so. Since all economic transactions involve exchange, consumers and producers will attempt to maximise the sum of their net gains from

the transaction, i.e. the "surplus" from consumption and production. These net gains are measurable in monetary terms through the concept of consumer and producer surplus. In Fig. 3.1, in the demand and supply schedule, consumer surplus is measured as the area between the demand curve and the price line, i.e. the horizontal line indicating the price paid for the good at a given quantity. The reason is that since consumer equilibrium requires the consumer to equate price with marginal utility (measured in monetary terms), the demand curve, as a measure of willingness to pay, is also the marginal utility curve of that good. Similarly, producer surplus is the difference between total revenue from his output minus the area under his supply curve, which is also his marginal cost curve.

This basic framework of producer and consumer surplus can be used to examine effects on resource allocation and national welfare of changing levels of agricultural prices and government intervention in the factor and product market via subsidies. According to Harberger [6] consumer and producer surplus analysis of the welfare effects of price policy is based on the following assumptions :-

a) that demand price for a good measures its value to the consumer

b) that supply price of a commodity measures its value to the supplier

c) that consumer and producer surplus may be aggregated.

We will now analyse whether society would gain or lose from the imposition of a factor subsidy, e.g. fertiliser subsidy by adopting the partial equilibrium analysis. [7]

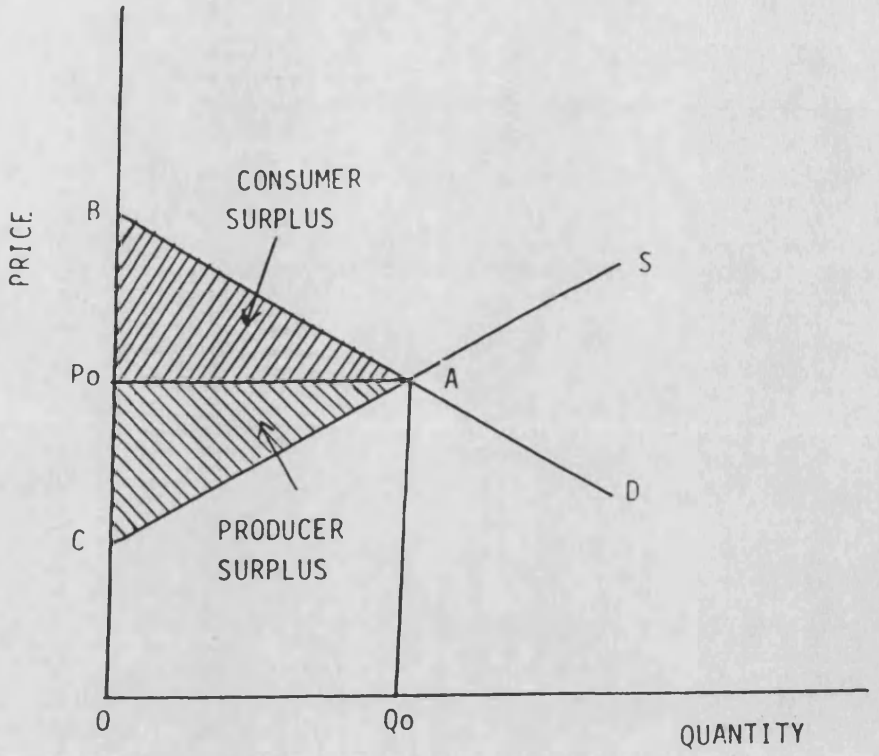

Fig. 3.1: PRODUCER AND CONSUMER SURPLUS

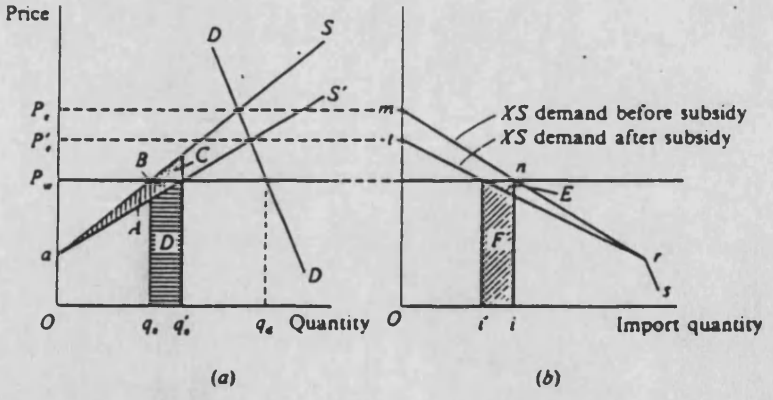

Fig. 3.2 : EFFECT OF AN INPUT SUBSIDY

Figure 3.2 and its analysis will show some of the important implications of a fertiliser subsidy policy. In Fig. 3.2 (a), the following are defined :-

aS = domestic agricultural supply curve (no subsidy)

DD = domestic demand curve

Pw = world supply price represented by horizontal line

At price Pe, domestic supply = domestic demand and imports are zero. This is plotted as point m in the figure. At world price Pw, domestic supply (no subsidy) = qs, domestic demand = qd. Hence, imports = qd - qs = i. This import is plotted as point n in the figure. Both m and n lie on the import demand or excess demand curve represented by curve mnrs in Fig. 3.2 (b).

Now assume a fertiliser subsidy is introduced. [8] It will reduce the marginal cost of production of farmers and cause the supply curve to shift to the right from aS to aS'. What the analysis would be able to show is the cost of the subsidy policy to the economy or put in another way whether the increase or benefit in output from the subsidy policy is greater or smaller compared to its costs. Note that the subsidy doesn't change the market price of the product which remain at Pw. Hence, demand would remain the same at qd but domestic supply of the product would increase to qs'.

From Fig. 3.2 (a), it can be seen that the cost of the subsidy to taxpayers is the value equivalent to the shaded areas A + B + C. As a result of the subsidy, producer surplus increased by A + B. A is an addition to the surplus because it represents a subsidy for resource costs needed to produce qs before the subsidy was introduced. B is also an addition to surplus because it represents

resource cost used to increase output from qs to qs'. If we were to net the cost of the subsidy against the increase in producer surplus, we will get C, which is the welfare loss or deadweight economic loss resulting from the subsidy. C then may be seen ..... " as the value of resources overcommitted to producing the commodity and represent a loss of production efficiency or misallocation of resources. " [9]

An alternative way to calculate the deadweight loss from subsidy policy is by looking at the resource cost. In Fig. 3.2(a), as a result of the subsidy policy, resource cost equal to the shaded areas B + C + D are drawn into production. As a result output expands, imports decline by the same amount and hence, there is a foreign exchange savings of area B + D (which is equal to shaded areas F + E in Fig. 3.2(b).) Therefore, additional resources worth B + C + D when valued at world price Pw have been used to achieve the foreign exchange savings of imports worth only B + D. This again shows that there is misallocation of resources equal to shaded area C.

The result of this partial equilibrium analaysis can thus be summarised as follows in terms of the shaded areas of Fig. 3.2 :-

Subsidy Cost to Taxpayers	=	A + B + C
Producer Surplus Gain	=	A + B
Deadweight Economic Loss	=	C
Resource Cost	=	B + D + C
Foreign Exchange Gain	=	B + D
Net Effect	=	Misallocation of Resources.

Hence, as a policy instrument, an input subsidy like fertiliser subsidy could result in efficiency losses or lead to misallocation of resources.

Indifference Curve Analysis

An alternative method to analyse the impact of subsidies on resource allocation and hence welfare would be to analyse consumer preference, production relationships and prices by using indifference curve analysis. [10] In this kind of analysis,the following assumptions are made:- [11]

a) that there are only two commodities

b) that resources are given

c) that technology is given and fixed

d) that there is full employment of resources

e) that there is a set pattern of consumer preference (indicated by indifference curves)

f) that there is mobility of factors

g) that the objective function is the maximixation of want-satisfaction

In Fig. 3.3, X1 and X2 are two commodities. ABC is the production possibility curve while DBE is the community indifference curve which is tangent to ABC at point B. This indifference curve represents the maximum possible want-satisfaction and thus welfare of the community. Equilibrium between production and consumption will occur when the marginal rate of substitution (MRS), which is given by the slope of the indifference curve is equal for consumption and production. This means that the rate of exchange

between the two products in terms of money, i.e. their prices will be such that the ratio of prices between these two products will be equal to the inverse of the MRS, both in production and consumption.

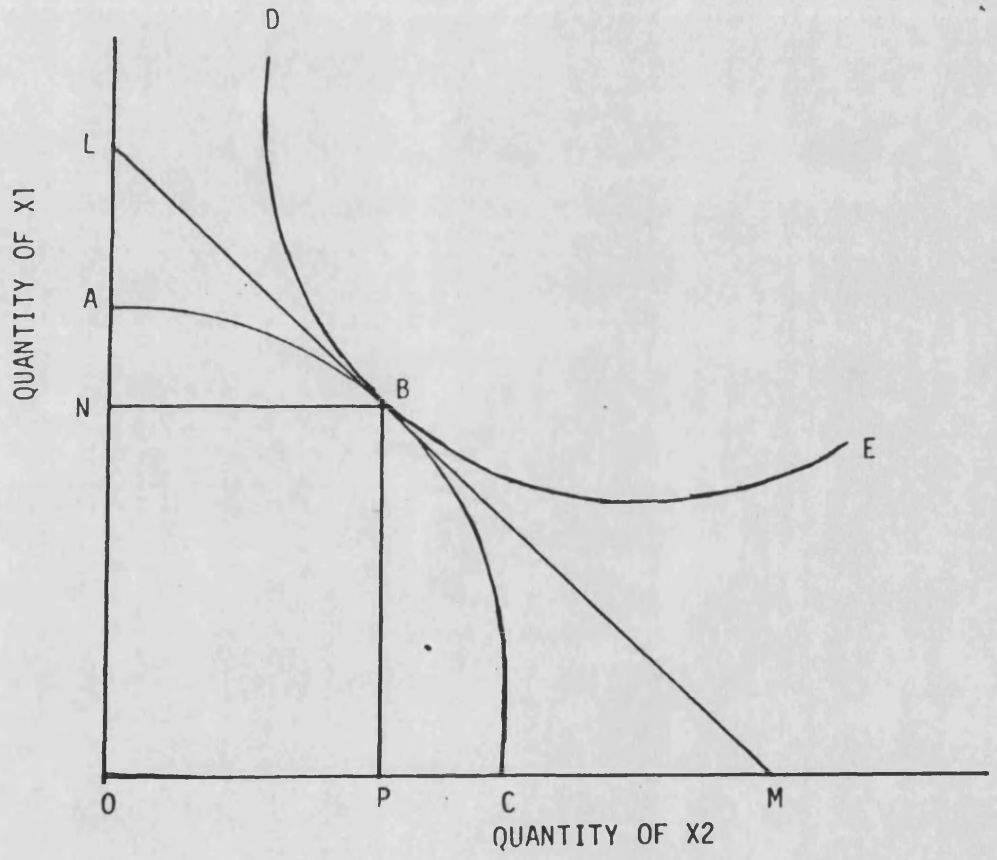

Fig. 3.3: CONSUMER OPTIMISATION IN INDIFFERENCE CURVE ANALYSIS

3.0 WELFARE EFFECT OF SUBSIDIES

Now, we shall use the above analytical framework to analyse the welfare effects of subsidies. Owing to the effects on inter-industry allocation of resources under conditions of full employment, economic intervention in the form of subsidies will cause different patterns of consumption and production to emerge as compared to the situation under non-subsidy. Here we shall show the discrepancy in the optimum conditions under subsidy and non-subsidy conditions using Figure 3.4.

Assume a two commodity model. AFBC is the production possibility curve. QS, GFI and DBE are the community indifference curves. Here welfare is maximised at B, where ON of X1 and OP of X2 is produced and consumed by the community. However, when a subsidy is introduced a reallocation of resources and production will occur, i.e. OL of X1 and OM of X2 produced. Now suppose that the community will consume the total production of X1 and X2 thus produced, it will bring about a lower level of want-satisafaction by the community than would be the case in the absence of the subsidy. In Fig. 3.4, such a pattern of consumption will place the community on a lower indifferent curve, GFI. In fact, consumers may not remove the whole production of OL of X1 and OM of X2 from the market and consume it. The result of this will be a still lower level of total consumption and hence want-satisfaction than that shown by the curve GFI. Such a level of want-satisfaction - hence welfare - is given by the curve QS. The above analysis, hence, suggests strongly that interference in the pricing mechanism through a subsidy will have an adverse effect on welfare of the community.

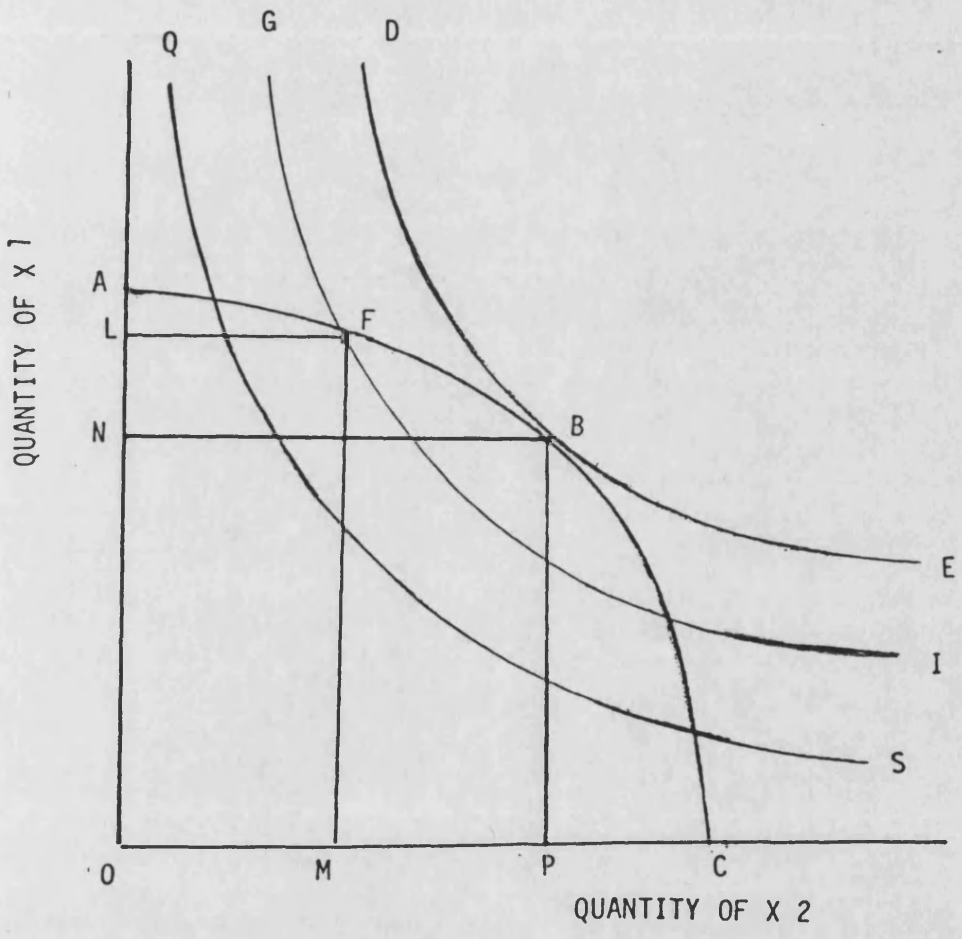

Fig. 3.4: WELFARE EFFECT OF SUBSIDY USING INDIFFERENCE CURVE ANALYSIS

Marginal Analysis

We can also illustrate the effect of subsidies on welfare and resource allocation by using marginal analysis. [12] If a subsidy is introduced, prices of resources and products are altered. This will tend to shift the equilibrium between inputs and production as shown in Figure 3.5.

In the diagram, when MC1 = MP1, OB amount of resources will be used. When the price of output is raised through a subsidy, the MP curve will shift to the right as MP2. Hence, a new equilibrium will be reached where the industry will use OC resources. An input subsidy will cause factor prices to be lower and the MC curve will decline. This is represented by a shift from MC1 to MC2. Here OD resources will be used at the new equilibrium instead of OB. If the subsidy causes prices for inputs to be lower, equilibrium will be determined by the intersection of MP2 and MC2. Here the industry will use OE resources. Therefore, if an industry or sector is favoured through the granting of input and output subsidies, it will result in increased resource use and hence production will be increased. However, under full employment of resources, the above can only happen by bidding away resources from other uses. Therefore, any price intervention in favour of one sector of the economy through subsidies will tend to discriminate against other sectors.

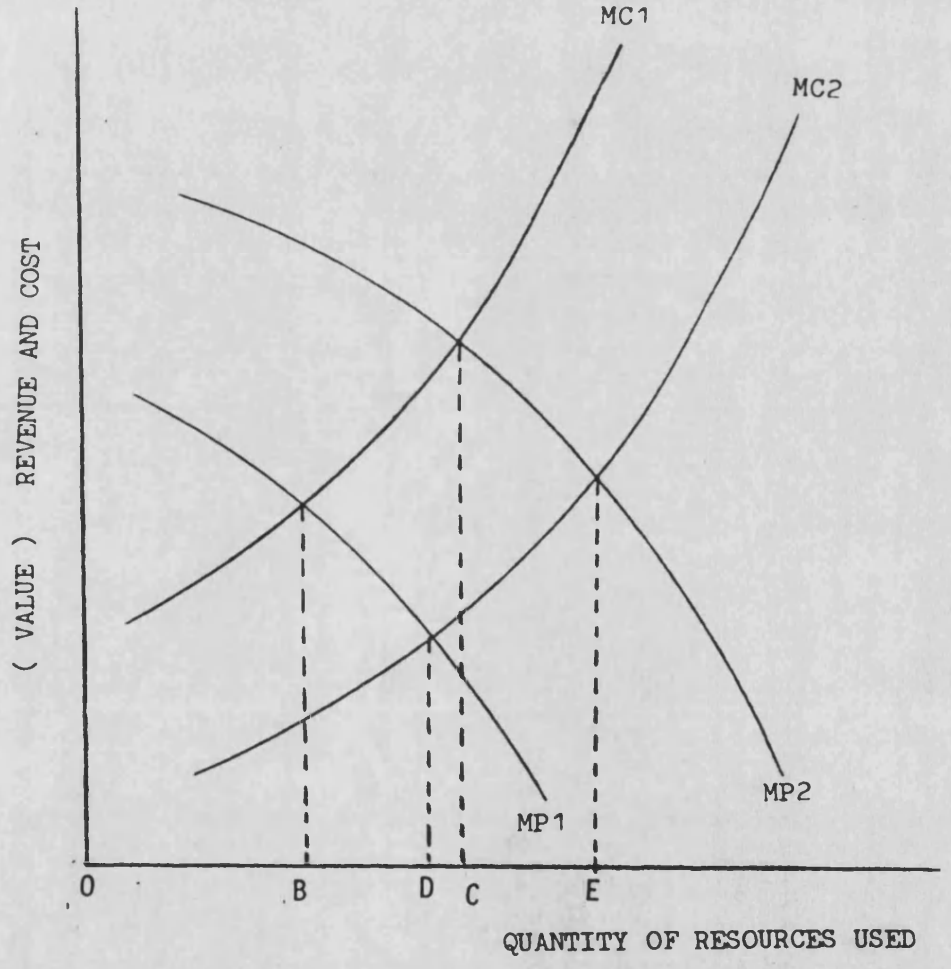

Fig. 3.5: WELFARE EFFECT OF SUBSIDY USING MARGINAL ANALYSIS

In addition, it should be noted that an output subsidy tends to lead to a maladjustment between production and consumption. This occurs because a rational producer will respond to a higher product price by producing more of the crop being supported. However, the reverse is true for consumers. They would prefer to buy a smaller amount at this higher price. Therefore, for the market to clear, there are three ways:-

a) consumers will have to be subsidised at this new higher price

b) exports will have to be subsidised to make it competitive (dumping)

c) surpluses could be disposed off physically through destruction as storage costs could be expensive.

Therefore, it would be clear that an output subsidy through a price support will have to be accompanied by other measures if surpluses are to be avoided through for e.g. acreage control, output restrictions or quotas or restriction on imports.

Effect of Subsidy on Input Use

A good indication of an effective subsidy is that it would act as an incentive for farmers to use more factor inputs such as fertilisers or better seeds. Hence a related issue to be resolved is whether farmers buy and use more improved inputs (assuming supply is readily available) with subsidies. In this regard, it would be relevant to ask what are the determinants of a factor input demand. Nieuwoudt found that of all the factors considered in determining the usage of fertiliser, its price is the most important. [13] This seems to agree with the findings of other studies. [14]

Other factors that also have an important bearing on the demand for fertiliser are the prices of crops, net farm income, capital assets of farmers and land prices. Nieuwoudt further contended that the withdrawal of the fertiliser subsidy need not necessarily reduce the total consumption or demand for fertiliser because improvements in the farmers' financial position would still stimulate its consumption. However, although this scenario may be true for the richer and bigger farmers, it is not necessarily so for the smaller and poorer farmers in LDCs because of their greater dependence on input subsidies for sustaining or improving their productivity. In addition, in the long run, an increase in the consumption of fertiliser may also lead to an increase in the demand for labour especially to cater for greater productivity which therefore requires more labour for harvesting. Therefore, factor subsidies such as fertiliser could affect not only the use of resources within the agriculture sector but also the allocation of resources to the other sectors such as the labour market.

Empirical Evidence of Welfare Effect of Subsidies

After discussing the theoretical question of the welfare effects of subsidies, we will discuss some empirical studies related to this. Among the economists who have conducted empirical investigation on the welfare effects of agricultural policies include Wallace, Nerlove, Groenewald, Floyd, Tolley, etc. [15]

Wallace [16] compared social costs and social benefits of price support programmes in United States. He used the premise that total area under the demand curve to the left of a given quantity represent total utility to the community and the supply curve reflects alternative costs to the community of resources to produce each quantity. He showed that a high support price which led to a greater quantity of crops produced but which cannot be disposed or consumed at that price would add more to social costs of the community than to total utility. Hence, according to Wallace, such programme have a dampening effect on the welfare of the community.

Bale and Greenshield [17] presented calculations on social cost of achieving two levels of Japanese agricultural production by government intervention. They calculated welfare costs of Japanese agriculture trade and production policies for 8 major cereals and livestock commodities produced and imported in Japan in 1975/76. They estimated that net social loss in consumption and production was substantial (e.g. consumption loss was US$276 billion and production loss was US$111 billion). They further projected that net social welfare loss for 1985/86 Plan would constitute about 2 % of Japan's GNP.

Bale and Lutz [18] analysed government intervention in

agricultural price determination in several DCs and LDCs. They discovered that agricultural policies pursued by LDCs produce effects which are diametrically opposite to those produced by the policies of many DCs and that policies of both are costly in terms of global welfare.

Harling and Thompson [19] in analysing the economic effects of intervention in Canadian agriculture found that the calculated deadweight welfare losses associated with distortions in prices and the resulting changes in quantities to be relatively small. They estimated that annual total deadweight loss or social cost from inefficiencies associated with government intervention was only $27.89 million. Nevertheless, the distributional impacts on consumers and producers were quite large.

In another study undertaken by Nieuwoudt [20] on input subsidy in South Africa, he estimated that welfare gains created by fertiliser subsidies exceeded social costs.

Numerous other studies undertaken by the World Bank [21] in the LDCs have contributed much to the understanding of the effect of subsidies and other government pricing policies on resource allocation. In view of the importance of the agriculture sector in the LDCs and agricultural pricing policies on economic development, it is anticipated that more of such country studies by the World Bank would be undertaken in the near future.

4.0 SUBSIDIES AND INCOME DISTRIBUTION

We have mentioned that equity considerations also feature prominently in the discussion of resource allocation. In this section, we shall try to answer the question of who benefits from a subsidy and by how much. We shall take the case of a fertiliser subsidy but the analysis is applicable to other agriculture subsidies as well.

First, we shall analyse theoretically the impact of subsidies on income distribution by using Fig. 3.6. AB is demand while S1S1 is supply of fertiliser before the introduction of subsidy. At the equilibrium price P1, farmers buy X1 quantity of fertilisers. Then the government subsidises fertiliser and supply shifts to S2S2. The amount of the fertiliser subsidy is P2 - P3. Assuming that the supply of fertiliser is not perfectly elastic, the farmer is now paying a lower price P3 than previously at P1 and is using more fertiliser than before, i.e. X2 rather than X1. The farmer's share of the subsidy EF and share of the supplier DE depends on the elasticity of demand and supply of fertiliser. The more elastic the supply, the bigger the farmer's share and the more elastic the demand, the bigger the fertiliser manufacturer's share. Nieuwoudt, after allowing for a lag in price adjustment calculated that the short and long-term price elasticities of demand for fertilisers in South Africa are estimated as 0.75 and 2.50 respectively. [22] The figures for other countries in the LDCs can be seen from a study by Krishna. [23]

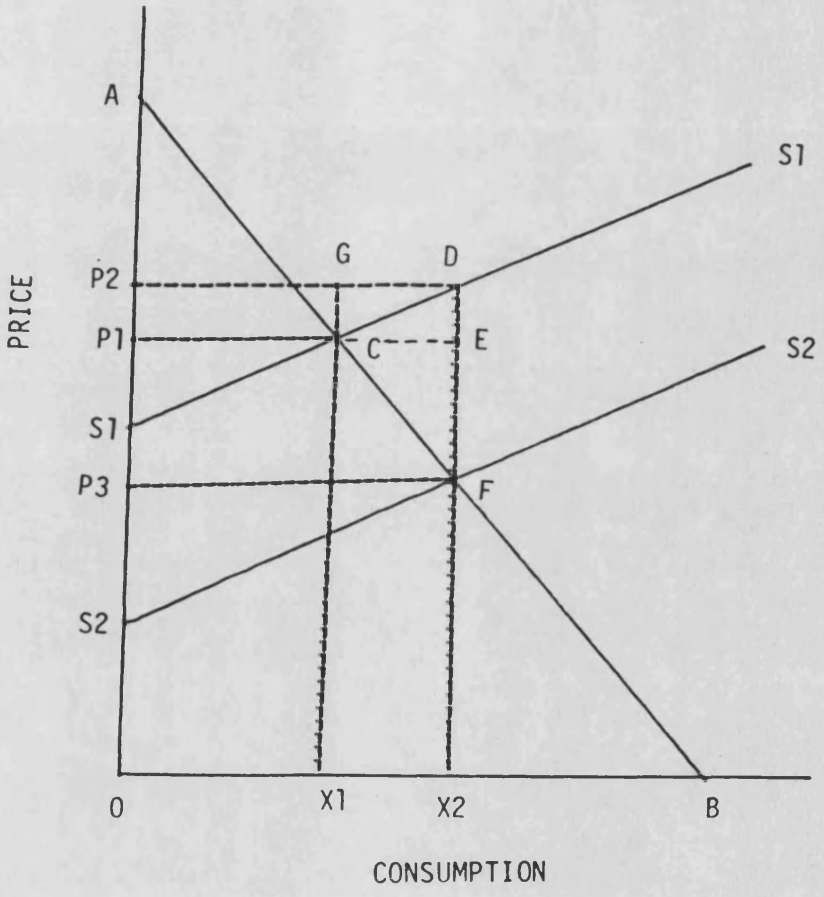

Fig. 3.6: EFFECT OF SUBSIDY ON INCOME DISTRIBUTION

Who Benefits From Subsidies ?

However, the more critical question to ask is which farmers benefit from subsidies? A lot of research on this matter has been conducted and it is generally found that the bigger farmers gain more from government subsidies than the smaller farmers. We shall see what are the findings of the various studies on this matter.

Brown [24] in his studies of input subsidies and its effect on income distribution in LDCs discovered that farm subsidies benefited mainly middle and upper-income farmers since large scale farmers are the ones who can afford to buy most of the subsidised inputs and poorer farmers cannot get access to important inputs since they lack the financial means to do so.

Davidson [25] argued that in Australia, it is the large farmers who need or deserve the subsidy the least are the ones who receive the largest share while the small farmer with the lowest production receive the least subsidy.

Sherrill [26] in a critique of the agricultural price support system of the U.S. said that the bigger farmers tend to reap more benefits than the smaller farmers from agricultural subsidies.

Boulding [27] echoed the sentiment of Sherrill and in a particularly critical statement said : "..... political pressure has produced subsidies towards agriculture in all societies, but where these subsidies tend to have gone to the rich farmers and have tended, if anything, to drive the poorer farmers out of agriculture altogether. This is particularly noticeable in the United States, where agriculture subsidies take the form of price supports, which inevitably subsidise the richer farmer, as it is the richer farmer

who has more to sell ..... ".

Self and Storing [28] focussing on the United Kingdom said that since agricultural price guarantees ignore the circumstances of individual farms and farmers, the largest amounts of aid go to successful farmers, while the poorest farmers get the least. They further stated that irrespective of what the state does, the larger farmers will continue to increase both their output and efficiency but that smaller farmers need help to overcome their intrinsic disadvantages.

Islam [29] in his study on Bangladesh agriculture discovered that larger farmers have easier access to irrigation which is heavily subsidised by the government. He concluded that the richer farmers are likely to get a disproportionate share of the benefits from the subsidy on irrigation. Thus he said, " .....it is clear that the subsidy on foodgrains and agricultural inputs does not have any positive distribution implications ..... subsidy on inputs is possibly benefiting the richer farmers disproportionately."

However, Meerman [30] in a comprehensive study of Malaysia found that in agriculture and rural development, those who benefited from land development schemes are the poor while those who benefited from subsidised inputs, extension activity and so forth, is extremely complicated to determine precisely. Nevertheless, Meerman believed that poor farmers have as much access to and consume as much of the various agricultural services and inputs as do wealthy farmers.

On the other hand, Wilson, [31] a political scientist noted that in U.S. and Britain, farm subsidies tend to benefit the rich. Quoting him : "..... The tragedy is that while rural poverty has often been used to justify the enormously expensive farm subsidy policies of Britain and the U.S., very little of this had benefited the rural poor or farmers with low incomes ..... , in both countries subsidies have gone primarily to farmers who enjoy incomes well above the national average". Wilson quoted Schultze [32] who argued that the main effect of farm subsidies has been to raise the price of farm land, again benefiting mainly the rich while the poorest farmers have benefited relatively little.

Myrdal [33] in his voluminous and detailed study of the South Asian sub-continent also expressed the view that the rich farmers benefited more than the poorer ones. He attributed this to the way farmers respond to economic incentives. He said :
" ..... the disproportionate distribution of benefits of governmental intervention in agriculture to the better-off groups is not solely related to the superior power position of these groups. The intensification of inequalities is also a product of normal economic responses. Peasant landlords and privileged tenants have displayed more aptitude for using opportunities offered by the increased availability of state aid and technological advances. Naturally they have obtained more benefits than other members of the agrarian structure who are apathetic and who have neither the means nor the incentives to avail themselves of the advantages offered. "

Summary

Hence, we can deduce from the above discussion that subsidies do create distortions in the economy and that empirical studies have attested to the fact that welfare losses are indeed significant. This is also in line with our belief that too much subsidy would be detrimental to the welfare of the nation and that a more selective and discriminate use of subsidies would be the best policy to adopt. As regards to equity and income distribution effect of subsidies, there is wide agreement among writers that subsidies do indeed benefit the farmers but that they do so disproportionately and that the richer and well to do farmers gain relatively more than the poorer farmers which is indeed contrary to the declared objectives of the government. This phenomenon seems to cause some concern and alarm to policy-makers in LDCs. In fact, many writers believe that the disparity in the benefits of government assistance is one of the attributory causes for the persistence of rural poverty in these countries. Hence, the question of access of the poor to governmental programmes is also one of the key means in alleviating rural poverty in most LDCs. [34] Hence, the mere existence of subsidy programmes per se does not guarantee that it would reach the target group that it was originally intended for. Deliberate and conscious attempts on the part of development workers must be made to ensure that the intended beneficiaries do get their share.

5.0 SUBSIDIES AND SUPPLY RESPONSE OF FARMERS

Understanding rural labour market behaviour and its characteristics is important to planners and policy-makers in LDCs in planning for the deployment of " surplus " labour force in the rural areas. [35] However, there have been voices of concern regarding the applicability of the standard neoclassical framework in measuring and estimating labour supply elasticities in LDCs. Besides the problem of data constraints and its reliability, it is believed that many of the assumptions of the neoclassical model (examples the homogeneity of labour) do not apply. However, studies done by Bardhan, Rosenzweig, Binswinger, Barker, Hart, etc. have refuted the above claims. A more important conclusion to be derived from these studies is that the small farmer and landless peasant do indeed act rationally and respond to economic incentives and that pricing policies such as subsidies do generate an important and significant effect on the labour supply function and therefore affect productivity.

In this section, we shall attempt to analyse the impact of subsidies on labour supply behaviour of rural households in LDCs. An appropriate place to start would be by utilising the basic income-leisure choice model in the theory of individual labour supply. [36] The model basically states that an individual can divide his time between work and leisure (non-work). Here both work and leisure are considered to be consumption goods. Consumer theory suggests that an individual receives utility from the goods that he consumes. But a person can only increase his earned income by spending more time (hours) at work and less time in non-work

pursuits. This interdependence between income and leisure is captured in the following utility function assumed for the individual :

$$u = u (y, l)$$

where y = income

l = leisure

u = utility

The assumptions made regarding this function are as follows :-

a) individual has got choice between income and leisure

b) individual endowed with non-employment income y

c) individual operates at a given wage rate

In Fig. 3.7, the following features are described :-

i) Consumption possibilities open to the individual is represented by the budget constraint ABC

ii) Initial endowment of time is OA

iii) Slope of segment BC determined by extra net income that can be exchanged by giving up an hour of leisure, which is the wage rate w

iv) Individuals assumed to have a given set of preference between income and leisure which is represented by a set of well-behaved indifference curves.

Here the individual is in equilibrium when his budget constraint is tangent to the highest attainable indifference curve at point E. Here he consumes OH leisure and AH hours of work. Now what happens if there is a change in y which is the wage rate ? Normally if the wage rate increases, the individual would respond by increasing his supply of hours worked.

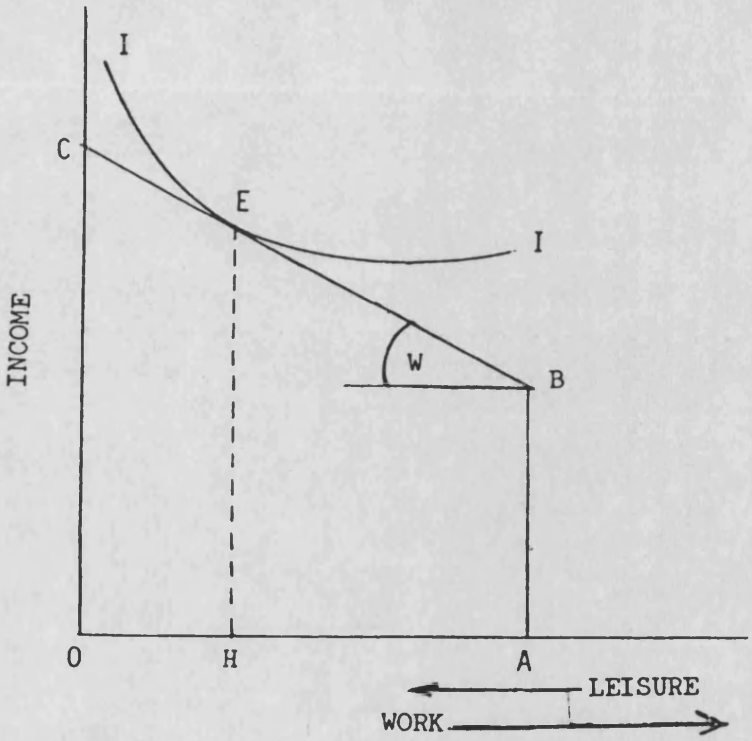

Fig. 3.7: MODEL OF AN INDIVIDUAL LABOUR SUPPLY

In a major study done on the effect of taxation on incentives, Brown [37] concluded thus: " A proportionate income tax thus causes an individual both to wish to work more (income effect) and simultaneously to work less (price or substitutiton effect). Because our theory is indeterminate, that taxes may make people work either less or more, the question can only be resolved through empirical research ".

Indeed, subsidies which is the obverse of taxation may indeed portray directly opposite effects as taxation does. At first sight, it would appear to be apparent that subsidies, which intend to reduce cost of inputs to farmers or increase returns to their output, would stimulate production and hence income of farmers. Another argument might take the position that since subsidies tend to increase the incomes of farmers, they might now work less than before because their demand for leisure would be now greater. However, to resolve this problem satisfactorily, empirical investigation needs to be done. For our present purpose, we take the stand that subsidies may or may not increase the supply of labour or greater man-hours to work. In other words, the proposition is that whether there is substitutiton of labour for income or leisure or vice versa when faced with subsidies is indeterminate.

In fact using the leisure-work framework, we can establish a whether there is a theoretical justification for subsidies. Fig. 3.8 is an example. Here the initial equilibrium at point A. Subsidy of £1 per hour will increase the maximum wage of labour to £72 per day. This may then reduce labour input as it is now possible to earn the same income with more leisure (i.e. less work) for

example by a movement to point C. But this move would not necessarily happen because it all depends on the shape of the work-leisure indifference curve.

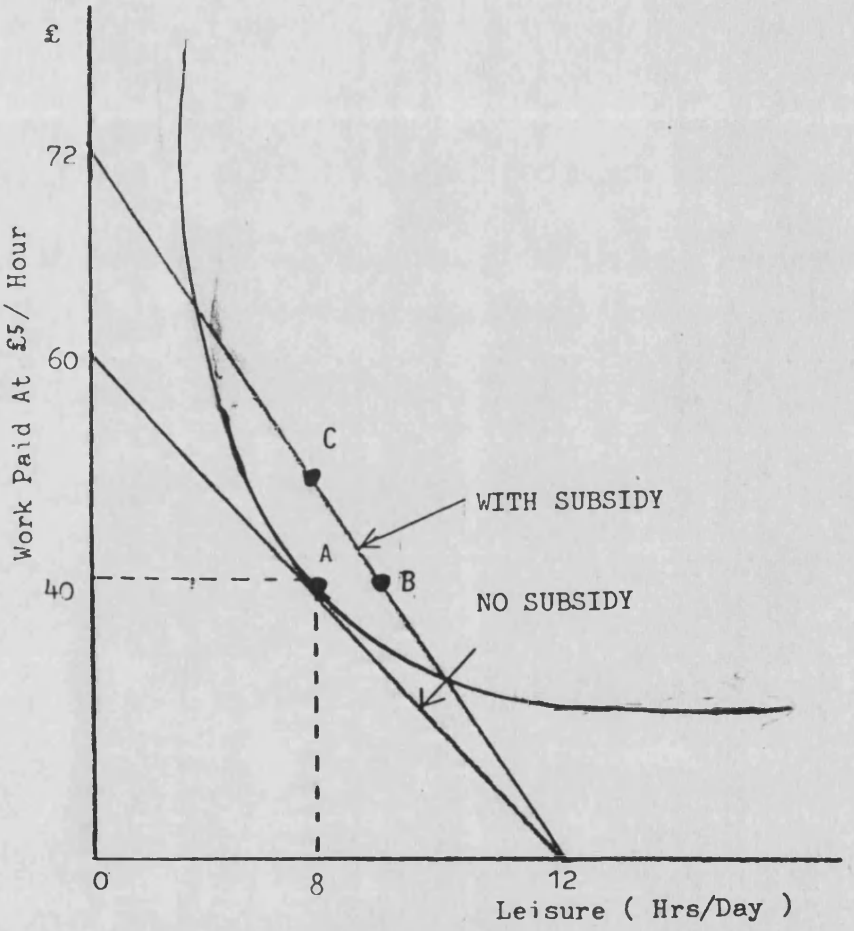

Fig. 3.8 JUSTIFICATION OF A SUBSIDY

Empirical Studies on Effect of Subsidies on Labour Supply

There has not been any studies done known to the writer on the effects of subsidy, per se, on labour supply in the LDCs. However, we can draw useful lessons on the studies done by Brown on the effects of taxation on the incentive to work. Nevertheless, there are a number of farm household and labour supply studies in the LDCs which could be a useful basis for our discussion. We shall extract some of the important findings from these studies.

Ahmed [38] in his study of Bangladesh agriculture commented: " Even if the supply of labour is abundant, hours of work per worker may not change significantly with a change in real wages (for example through subsidies) because the work day is already long. This rigidity limits the effect of price change (or subsidies) on production. In this case, higher income and more leisure may be equally appealing to workers. Each increment in production is achieved through harder work reflects in the real cost of labour the choice each worker must make between a reduction of time spent working and an increase in his income, enabling him to purchase more goods and services " . In fact, in many LDCs the poor farmer is persisting on subsistence standards over and above the normal time of working. This is because the return he gets can meagrely support him to subsist. Hence, he will take every opportunity to add his income through whatever means is available.

With respect to policy measures to induce workers and farmers to work harder for income, Mellor [39] has suggested certain measures to influence the choice of labour over leisure by increasing the availability of attractive consumer goods over a wide

range of prices and removing various cultural restraints on increasing consumption.

Schultz [40] agreed with the views of Mellor and pointed out that: " In a developing country, ... the minor role of the market sector in satisfying the final demands of consumers. In this case, if more market investment is allocated to the production of consumer goods, consumers might work longer hours in the market to be able to purchase the wider array of market produced consumer goods if these are effective substitutes for home produced products. If consumer goods, on the other hand, are neglected and governmental savings are channeled into increasing the production of heavy industrial goods, the per worker supply of labour to the market may diminish " .

In addition, the status of farmers may also affect their supply of labour in the light of the incentives given. This is especially true between large, medium and small farmers. [41]

To get a further insight into the question of labour supply response of farmers in LDCs, it would be instructive to analyse the labour supply behaviour and its characteristics. [42] It has been established that farmers in LDCs are rational and respond to economic incentives. The myth of the lazy native workers who like to idle and laze more than working after having acquired a minimum income, and thus exhibiting the backward-sloping supply curve of labour, has been widely refuted. [43] In fact it would not be irrelevant to mention that the phenomenon of perverse supply response of labour is not inconsistent with economic behaviour. For example, even in developed countries, most people after having attained a certain level of income would not want to work for more

hours since the net addition to income would be heavily taxed. This attitude to avoid additional work due to the effect of taxation is termed by Lewis as the " tax mentality ". [44] Hence, it would be more worthwhile and rational for a person not to work for the extra hours despite being offered an extra income and instead enjoy the leisure.

According to Rosenzweig [45] the development literature assumes the following about the rural labour markets in LDCs :-

a) that they are non-competitive with a rigid, institutionally set exogenous wages,

b) the presence of significant underemployment or unemployment ,

c) " special " models of rural households differentiated by size of landholdings and /or access to labour are inappropriate, and

d) that rural labour is homogeneous.

One factor in determining the effect of subsidies on labour supply and employment is the shape of the supply curve of labour. [46] The shape of labour supply curve is in turn affected by the preference of farmers for leisure or work / income. Relatively little empirical evidence exists on labour supply behaviour in rural areas of LDCs. However, we shall extract and highlight the findings of the few noteworthy studies that have been done.

Rosenzweig [47] who worked on data of rural India concluded in his study that the annual number of days of wage employment by individuals is determined mainly by supply rather than demand (as neoclassical model implies). Therefore, because of positive preference for leisure, the supply curve for individual labour is backward bending. Also he observed that geographical immobility is

characteristic of the rural labour market.

Bardhan [48] estimated labour supply functions using a large set of cross-sectional data for agricultural workers in rural West Bengal. He found that for the casual farm workers and small cultivators, wage response to hiring out labour is positive but small, i.e. elasticity varies between 0.20 to 0.29. But wage response is not significant for total labour supply of all size groups combined together. This indicate the existence of backward-bending supply curve for medium to large farmers. He concluded that labour supply is primarily determined by social and demographic conditions of labour-supplying households and their assets.

Hart [49] from a systematic survey in Indonesia demonstrated that even landless labourers remain employed (including self-employed) almost all year in work of low productivity. Changes in wage rate would hardly influence their total hours of work. On the other hand, only a large change in wage rate (or return to labour) would induce relatively well-to-do people to work harder. This pattern of behaviour indicates inelastic labour supply (preference for leisure) in rural Indonesia. In her study, Hart also found that the villages worked hard and are fully employed, often working more than 40 hours per week and that the poorer members of the village tend to work longer hours

In Bangladesh, studies on rural employment indicate that even though there is apparent labour surplus, voluntary unemployment and underemployment is quite large. This indicates a preference for leisure and the inelastic supply curve for labour. Ahmed [50] found that the aggregate rate of unemployment in one area in the

Commilla district in 1975 / 76 was about 12 %, in which about 8 % were involuntarily unemployed, 26 % voluntarily underemployed and 8 % voluntarily unemployed.

In another study, Ahmed [51] analysed the relationship between wage rate and unemployment of hired agricultural workers and discovered that the method supports the conclusion from the previous studies that the supply curve of agricultural labour is relatively inelastic. The above discussion indicates that in LDCs the supply of labour from large and medium farm households for manual work in agriculture is much more inelastic than that from the landless and small farm households.

Summary

In summary, it is therefore clear that before we can attempt to analyse the effects of subsidies on labour supply in LDCs, it would be meaningful first to establish and to get a clear idea of the behaviour and characteristics of labour supply in the LDCs and their supply response to price incentives. From the evidence adduced above, it is obvious that farmers in LDCs do indeed portray rational and normal economic behaviour. The studies that have been done on labour supply functions in the LDCs suggest, however, that the supply of labour is quite inelastic and the implication is that to persuade the farmers to offer more of their labour, a greater measure of incentives need to be offered. However, whether subsidies would be able to induce them to work harder is difficult to predict since there are many other variables that have to be considered. This would include the following :-

a) number of hours farmers already committed to work

b) the status of farmers

c) relative preference for leisure or greater income which in turn is determined by personal characteristics, level of education, etc.

d) the availability of attractive consumer goods with which to spend their extra income

e) the net benefit that they could get from the subsidy

f) the amount of subsidy.

6.0 CONCLUSION

We have surveyed the literature and analysed the impact of subsidies on resource allocation and on redistributional aspects using conventional neo-classical arguments. However, since most of the analysis is done in the static framework, it is not fully satisfactory. Hence, the weakness of the approach. But it has to be borne that in order for the analysis to be more realistic, time has to be taken into consideration and a dynamic approach has to be taken. In addition, the chapter has also surveyed and supplemented the theoretical part of the analysis by giving empirical evidence from various studies conducted in the relevant fields.

NOTES

1. Among the important studies done on agricultural pricing policies in LDCs would include T.W. Schultz (ed) (1978), Distortions of Agricultural incentives, Bloomington, Indiana University Press; Raj Krishna (1982), " Some Aspects of Agricultural Growth, Price Policy and Equity in Developing Countries, " Food Research Institute Studies, Vol 18 (3); G. Tolley, V. Thomas & C.M. Wong (1982), Agricultural Pricing Policies and Developing Countries, The Johns Hopkins University Press.

2. K.D. George & J. Shorey (1978), The Allocation of Resources: Theory and Practice, George Allen & Unwin, London, p. 11.

3. For a detailed and fuller discussion of the concept of optimality, see K.D. George & J. Shorey, ibid., and W.J. Baumol (1977), Economic Theory and Operations Analysis, Prentice-Hall International Inc., Part I, pp. 3-42

4. K.D. George & J. Shorey, op. cit., pp. 11-12.

5. For a survey of the theoretical foundation as well as application of the concept of economic surplus, see J.M. Currie, J.A. Murphy & A. Schmitz (1971), " The Concept of Economic Surplus and Its Use in Economic Analysis," The Economic Journal, Vol. 81 (324), pp. 741-99.

6. A.C. Harberger (1971), " Three Basic Postulates for Applied Welfare Economics, "Journal of Economic Literature, Vol. 9 (3).

7. Partial equilibrium analysis approach involves the manipulation of supply and demand curves in product and factor markets to identify the effects of different policy changes upon a whole range of variables including producer and consumer surplus, balance of payment costs and budgetary expenditures. In this form of analysis any policy can be assessed by comparing its economic effects with an alternative policy. For an application of partial equilibrium analysis see Colman, D. & Young, T. (1988) Principles of Agricultural Economics: Markets and Prices in Less Developing Countries, Cambridge University Press, p. 264.

8. The analysis in this section relies heavily on Colman, D & Young, T. (1988), ibid, pp. 273 - 276.

9.- Colman, D. & Young, T. (1988), op. cit., p. 275.

10. A typical example of this kind of analysis can be found in J.A. Groenwald (1964), " The Effects on National Economic Welfare of Economic Interference in Favour of Agriculture, " South African Journal of Economics, pp. 283-93.

11. According to J.A. Groenwald (1964), ibid., the maximisation of want-satisfaction implies that the community indifference curve is farthest away from the origin but still within the orbit of the production possibility curve.

12. For a good account and application of marginal analysis, see W.J. Baumol (1977), op. cit.

13. W.L. Nieuwoudt (1973), " Factor Subsidies and Certain Policy Implications " Quarterly Journal of Agricultural Economics, Vol. 1.

14. Z. Griliches (1958), " The Demand for Fertiliser: An Economic Interpretation of a Technical Change, " Journal of Farm Economics, Vol. 40, pp. 591 - 606; Y. Hayami (1964), " Demand for Fertiliser in the Course of Japanese Agricultural Development, " Journal of Farm Economics, Vol. 46, pp. 766 - 779; D. Metcalf & K. Cowling (1967), " Demand for fertiliser in the United Kingdom, 1948 - 65," Journal of Agricultural economics, Vol. 18, pp. 375 - 385; all cited in W. L. Nieuwoudt (1973), op. cit., p. 7.

15. T.D. Wallace (1962), " Measures of Social Costs of Agricultural Programs, " Journal of Farm Economics, Vol. 44; M. Nerlove (1958), The Dynamics of Supply, The Johns Hopkins Press; J.E. Floyd (1965), " The Effects of Farm Price Supports on the Return to Land and Labour in Agriculture, " Journal of Political Economy.

16. T.D. Wallace (1962), ibid.

17. M.D. Bale & B.L. Greenshields (1978), " Japanese Agricultural Distortions and their Welfare Value, " American Journal of Agricultural Economics, Vol. 60.

18. M.D. Bale & E. Lutz (1981), " Price Distortions in Agriculture and Their Effects: An International Comparision, " American Journal of Agricultural Economics, Vol. 63 (1).

19. K.F. Harling & R.L. Thompson (1983), " The Economic Effects of Intervention in Canadian Agriculture, " Canadian Journal of Agricultural Economics, Vol. 31 (2).

20. W.L. Nieuwoudt (1979), " Measures of Social Cost (or Benefits) of an Input Subsidy and the Value of Information, Journal of Agricultural Economics, Vol. 30 (1).

21. Some of the studies done include: T. Bertrand (1980), " Thailand - Case Study of Agricultural Input and Output Pricing, " World Bank Staff Working Paper, (WBSWP), No. 385, Washington DC, World Bank; C. Gotsch & G. Brown (1980), " Prices, Taxes and Subsidies in Pakistan Agriculture, 1960-76, " WBSWP, No. 387; E. Lutz & P.L. Scandizzo (1980), " Price Distortions in Developing Countries: A Bias Against Agriculture, " European Review of Agricultural Economics, Vol. 7 (1); L.G. Reca (1980), " Argentina: Country Case Study of Agricultural Prices and Subsidies, World Bank Staff Working Paper, No. 386; K.C. Cheong & E.H. D'Silwa (1984), " Prices, Terms of Trade and the Role of Government in Pakistan's Agriculture," World Bank Staff Working Paper, No. 643.

22. W.L. Nieuwoudt (1973), op. cit., p. 5.

23. R. Krishna (1973), " Agricultural Price Policy and Economic Development, " in H.M. Southworth & B. Johnston (eds), Agriculture Development and Economic Growth, Cornell University Press, p. 506-507; also quoted in S. Ghatak (1978), Development Economics, Longman, pp. 108-111.

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25. B.R. Davidson (1969), " Is There a Case for Agricultural Subsidies?" Farm Policy, Vol. 8 (4), Nedlands, W. Australia,p. 107

26. R.G. Sherril (1969), " Reaping the Subsidies, " The Nation, Nov. 24, pp. 561-566.

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33. G. Myrdal (1967), Asian Drama, Vol. 2, Penguin, p. 1367.

34. The issue of " access " is another important topic in the development literature. For a good account see B.B. Schaffer & Huang Wen-Hsien (1975), " Distribution and the Theory of Access ", Development and Change, Vol. 30 (4).

35. For a summary of the widely used concept of " surplus " in LDCs agriculture, see L.G. Reynolds (1977), Image and Reality in Economic Development, Yale University Press, pp. 116-119

36. R. Shone (1981), Applications in Intermedite Microeconomics, Martin Robertson, Oxford University Press, pp. 6-12.

37. C.V. Brown (1983), Taxation and the Incentives to Work,

Oxford University Press, p. 6.

38. R. Ahmed (1981), Agriculture Price Policies Under Complex Socio-Economic and Natural Constraints: The Case of Bangladesh, International Food Policy Research Institute, Research Report No. 27, p. 13.

39. J.W. Mellor (1963), " The Use and Productivity of Farm Labour in Early Stages of Agricultural Development, " Journal of Farm Economics, Vol. 45, pp. 517-534.

40. T.P. Schultze (1981), Economics of Population, Addison-Wesley Publication Company, p. 76.

41. I. Ahmed (1978), " Unemployment and Underemployment in Bangladesh," World Development. Vol. 6 where it stated that rich landlords, village elites and the educated consider manual work in agriculture as harmful to their social prestige. Therefore, they become unemployed voluntarily to escape from this stigma.

42. For a comprehensive discussion on labour markets in LDCs, see A. Berry & R.A. Sabot (1981), " Labour Market Performance in Developing Countries: A Survey, " in P. Streeten & R. Jolly (ed), Recent Issues in World Development: A Collection of Survey Articles, Pergamon Press, pp. 149-193.

43. For example, see T.W. Schultz (1978), op. cit.; Uma Lele (1969)," Agricultural Price Policy," Economics and Political Weekly, August 30; J.W. Mellor (1968), " The Functions of Agricultural Prices in Economic Development," Indian Journal of Agricultural Economics, Vol. 23, pp. 23-37; S.H. Alatas (1977), The Myth of the Lazy Native, Frank Cass, London.

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Agrarian Economy, "American Economic Review, Vol. 69, cited in Raisuddin Ahmed (1981), op. cit., p. 45

49. G.P. Hart (1978), Labour Allocation Strategies in Rural Javanese Households, Ph. D. Thesis, Cornell University, cited in Raisuddin Ahmed (1981), op. cit., p. 46

50. I. Ahmed (1978), op. cit.

51. R. Ahmed (1981), op. cit., p. 47.

CHAPTER FOUR

THE SMALL FARMER IN LESS DEVELOPED COUNTRIES

1.0 INTRODUCTION

In the previous two chapters, we have focussed our discussion and analysis on the issue of agricultural subsidies and examined their role and contribution towards stimulating and improving agricultural productivity. We came to the conclusion that although subsidies are critical components of agricultural development strategy, they have, by and large, benefited mainly the bigger and relatively well-off farmers. The smaller and especially landless farmers have either benefited relatively little or virtually nothing at all due to either inaccessibility or because the subsidies were too insignificant to be of much value to them. The potential, therefore, of increasing and enhancing the productivity of small farmers through greater accessibility and actual usage of realistic amounts of subsidy would therefore be of interest to the farmers and planners in LDCs.

In this chapter, we shall focus on the small farmer who we assume is the target group and intended beneficiary of subsidy programmes. Our objective here is to analyse who he is, his economic and social characteristics and disposition, his attitudes, motivations, values and hence his socio-economic behaviour.

More specifically, we will discuss the following :-

i) Definition of the small farmer and his general characteristics

ii) Motivations, values and attitudes of the small farmer

iii) Objectives of the small farmer and factors affecting his behaviour pattern

iv) How farmers allocate scarce resources

v) Responsiveness of farmers to economic stimuli

2.0 DEFINITION AND CHARACTERISTICS OF SMALL FARMERS IN LDCs [1]

It is generally assumed in any discussion of the peasantry or subsistence farmers in the LDCs that the focus is on the small farmer. However, since there are many different interpretations and notions of what is and who constitutes the small farmer, it would be quite proper to attempt a definition of the small farmer for the purpose of this chapter. A particularly interesting approach was that taken by Wharton (1970) in his synthesis of the meaning of the subsistence farmer. He did that by establishing five economic and five socio-cultural criteria associated with the subsistence farmer. [2]

On the basis of economic criteria, the small farmer consumes most of his production while giving relatively little emphasis for the market. He uses mainly his own family labour and hence the ratio of hired wage labour to total labour force used in production is very small. Similarly, the ratio of purchased factor inputs to all inputs used in production is also very small. Normally, all inputs come from the farm household itself while those purchased outside are very insignificant or virtually nothing at all. Therefore, it is not at all surprising that the farmer utilises very simple tools which are relatively backward and this partially explains the reason for his low output and productivity. In almost all the cases, the

farmers earn very low income and hence the ability to generate further capital and savings is denied. Finally, the subsistence farmer is depicted as one who has very limited choices due to the inherent constraints and bottlenecks present in the subsistence economy.

As regards to the second set of criteria related to the small farmer the premise is that of a " strong influence ..... of socio-cultural considerations in the process of production and labour use and in the distribution or exchange of agricultural output". [3] In this case, among the variables linked to the sociocultural category would include non-economic factors like cultural and social obligations as well as institutional factors. In addition, the small farmer have relatively less external contacts with the outside world and hence tend to have a " localite " focus. Furthermore, the small farmer tend to have a stronger interpersonal relationship than modern commercial farmers. It is also contended that the peasant farmer's psychological make-up is characterised by a lack of achievement-oriented motives and more towards " subsistence-mindedness ". Finally, peasant farmers are also said to be tradition-bound and tend to resist change in their production mode.

However, we would prefer a definition adopted by Ellis [4] whereby he defined peasants or small farmers to be household agricultural producers characterised by partial engagement in incomplete markets. This definition is more comprehensive and serves a number of purposes as follows :-

a) it recognises that peasants are part of a larger economic system, and therefore that their economic behaviour as agricultural

producers depends on how the larger system works for them;

b) it allows peasants some limited capacity for survival independent of the larger system, and this may sometimes be important for explaning peasant economic behaviour;

c) it emphasises that peasant production takes place in a context of factor and product markets which are not fully formed, and depending on which markets are incomplete, this has an important impact both on their relative autonomy as agricultural producers and on the kind of economic decisions they make;

d) it serves to distinguish peasants both from the capitalist farm enterprises (hiring wage labour) and from commercial family farmers operating in the context of fully formed factor and output markets;

e) it lends a strategic perspective to agricultural policies which are often concerned with accelerating the transition of peasants into commercial family farmers by improving the working of markets,increasing the use of purchased inputs, and removing the social and economic constraints which distinguish peasants from other economic actors in the market economy. "

Hence, from Ellis's perspective, small farmers in LDCs are a unique category of economic actors who operate and respond differently to economic stimuli because of different resource endowments and situations facing them. And hence the approach to take to help overcome the socio-economic problems of small farmers are also different. However, it has been universally acknowledged that small farmers in LDCs are indeed an unfortunate lot and much need to be done to assist them to get out of the " poverty trap ".

In fact, poor farmers have been the focus of countless measures by both national and international developmental agencies to assist them to improve their living standards. But ironically the fate of the majority of poor farmers seem to remain stagnant and backward. [5] Whether it has been the fault of the government for prescribing the wrong strategies or for formulating poor plans or for poor implementation despite impressive and feasible plans or whether the " developmental environment " is not conducive enough and hence need to be restructured and reformed or whether the farmers themselves are not responding and participating sufficiently in government programmes is a subject of great controversy and interest. [6]

3.0 MOTIVATIONS, VALUES AND ATTITUDES OF SMALL FARMERS [7]

Before we embark on a discussion of farmers' behaviour and analysing their decision-making modes, it would be instructive to discuss briefly their attitudes, values and motivation because eventually these variables shape the behaviour pattern of farmers. In fact according to Clayton (1983), many agricultural development plans, policies and projects failed or were unsuccessful because of the inability of government programmes to address the right problem and give the right solution. This implies that policy-makers and planners do not understand their target-group well enough, especially relating to the following matters :-

i) farmers' physical and economic endowment

ii) farmers' objectives and priorities

iii) farmers' environment and their constraints, and

iv) farmers' attitudes, values and motivations.

In this regard, it is worth pointing out that most of the studies done on attitudes, values and motivations of farmers were mainly undertaken by sociologists, anthropologist or psychologists while the economist is contented to assume these as " the given " since they are considered as non-quantifiable and involve random behaviour. Some economists believed that human motivation is incapable of being explained. [8]

According to Lewin [9] human behaviour is a function of the person in his environment which implies that behaviour depends on the interaction of the person who has certain goals, aspirations and objectives and his environment where he gets his resources and materials. This mode of thinking is in direct conflict with that of conventional economic theory which treats behaviour as a parameter. By assuming behaviour to be a constant, the economist would be in a position to proceed smoothly with his models to get the desired results more easily.

However, Gasson [10] observed that "..... orthodox economic theory treats the goal of behaviour as a parameter since production, exchange, investment and so on are assumed to be undertaken to maximise monetary gains. Therefore, with one class of variables treated as a constant, the economist's task is simplified considerably and he is able to manipulate resource variables and construct elegant and complex models to explain and predict behaviour. The sophistication of these models may divert attention from the fact that they are built on heroic assumption about human

motivation and to this extent are removed from reality ..... . beyond postulating that his goal is profit maximisation and that he is rational, which implies that when confronted with alternative he selects that course of action yielding highest profit, economic theory assumes nothing about the personality of economic man ". In fact a body of literature has now emerged which is concerned with the above matter and is questioning basic assumptions made of the motive of economic actors. Also new areas of studies like Islamic Economics, Economic Pshychology, etc. is fast gaining popularity because it gives an alternative and wider perspective of economic issues dominated by traditional neo-classical models.

For example, the proposition of profit motive in economics has been challenged and subjected to much criticism and objections. [11] For example, Gasson, a sociologist classified four categories of objective (other than profit maximisation) that a farmer is likely to pursue. [12] She concluded her analysis of how economics treat the farmer with a dismal note saying that for the purpose of explaining farmers' behaviour, economic theory is " intellectually satisficing but not particularly convincing. "

According to Tweeten [13], the abundance of natural resources by itself is inadequate to explain economic growth. He postulated that attitudes of people and the characteristics of institutions that regulate and coordinate activities is as important. On the other hand, Alam [14] postulated that having the proper work ethos may determine how fast a nation can develop. Arnon [15] emphasised that agricultural development is not purely a function of technological and economic factors but its success also crucially

depend on three factors:-

i) understanding of the society where development takes place

ii) socio-cultural knowledge about farmers' responsiveness to technological changes and

iii) ability to get willing cooperation of people involved

Arnon [16] said that in this connection, there were two schools of thought about motivations, attitudes and values of traditional subsistence agriculture. The first school deems that only economic factors determine peasant behaviour and that peasants will respond to economic incentives quickly and normally (Schultz: 1964; Mellor:1966). Here sociocultural factors only play a marginal role in determining farmers' behaviour. The second group feels that non-economic factors outweigh economic ones and hence would lead to behaviour not within bounds of economic rationality. (Balogh :1966)

However, we agree with the contention that both extremes as discussed above do not reflect the real situation. Individual farmers and groups fall between the two extremes. For example, certain groups of farmers do not require much persuasion to adopt new techniques and methods of production while others resist change strongly.

In view of the above, the study of values, attitudes and motivation is important in economic theory because social values are sometimes perceived as obstacles to development and modernisation. [17] This is especially important in the agricultural sector of LDCs because the farmer is the root of all development.

Sub-Culture of the Peasantry

In this connection it would be useful to quote Rogers [18], who studied the subsistence farmer. He listed ten elements which he believed exists in the so called " sub-culture of the peasantry ". These ten elements in fact summarises the motivations, attitudes and values of subsistence farmers and include lack of innovation, fatalism, low aspiration, lack of deferred gratification, limited time perspective, familism, dependent on the government, localiteness, mutual distrust in interpersonal relations and lack of empathy.

Unfortunately, all ten elements seem to be biased against the farmer and seem to connote negativities. However, Castillo [19] took Rogers to task for such characterisation of the subsistence farmer and brought evidence from the Philippines that negated many of the negative attributes discussed by Rogers. This serves to show the misperception that Western writers had of the subsistence farmers in LDCs. The contention of many studies is that subsistence farmers in LDCs are rational and economic in their outlook. As Todaro [20] stated, " ..... peasant farmers do act rationally and are responsive to economic incentives and opportunities. Where innovation and change fail to occur, we should not assume that peasants are stupid, irrational or conservative: instead we should examine carefully the environment in which the small farmer operates to search for the institutional and commercial obstacles that may be blocking change ".

4.0 OBJECTIVE OF SMALL FARMERS AND FACTORS AFFECTING BEHAVIOUR

The production process in subsistence agriculture is quite distinct from that of modern commercial farming. Whereas capital and hired labour are two major components of commercial farming, traditional agriculture uses mainly two basic inputs, family labour and land. However, labour tends to play a relatively more important role than land in susbsistence agriculture. According to Clayton [21], farmers' production decision and behaviour depends upon two sets of factors, namely constraints imposed upon the farmer and the objective function of the farmer.

Constraints of Farmers

With respect to the first factor, Clayton [22] listed six factors which he considered to be major constraints in the farm environment. They include the land-population ratio, the farm household economy, the hand-labour economy, socio-cultural factors, poverty and rainfall. The cumulative effects of all these constraints affects the productivity and efficiency of small farmers. For example, reliance on rainfall make farmers vulnerable to the elements.

Objective Function of Farmers

We have seen above that contrary to orthodox economic theory,

the small farmer in LDCs does not aspire solely to maximise profit or make monetary gains. In fact, the prority and emphasis given to this goal is relatively small. The farmer is more concerned with day-to-day survival. For example, Clayton [23] listed the following objectives and goals of a typical small farmer in LDCs :-

a) to have an adequate and guaranteed supply of food,

b) to have a minimum income for buying basic consumer goods,

c) to have security (physical and psychological),

d) to fulfill traditional obligations and

e) to have an adequate amount of leisure.

This view is shared by Sen [24] who says that the objective function and goals of peasant farmers may not be to maximise profit at all but he may want to pursue wider goals which is less self-centred and more towards the community benefit. This incorporation of non-profit elements into the model would therefore tend to create problems with conventional neo-classical economic models in an attempt to analyse the economic behaviour of peasant farmers. For example, farmers may want to maximise family welfare instead of maximising profit.

Mellor [25] on the other hand, considers that the trade-off between the following objectives listed below tend to have a great influence in determining farmers' behaviour and his decision-making mode.:-

a) work versus leisure

b) security versus change

c) present income versus future income

According to Mellor, farmers' values, interests and objectives do not seem to coincide with that of government. In other words, there seems to exist a kind of " divergence of interest and objective " between government and farmers. For example the government always seem to assume that farmers would give high weight to maximising output and hence income or that farmers dislike to waste time and idle around or that farmers give high regard to consumer goods and would therefore work extra hard to earn money to buy them. In assuming so, the government expects that the farmer would respond appropriately and positively to its programmes. Unfortunately, this is mostly wishful thinking on the part of the government since there is, firstly the presence of the divergence of objective and interest between farmers and the government, and secondly the government always takes the farmers for granted. Virtually very little consideration is given as to how to assist the farmer to overcome his basic constraints and defects, as for example on the issue of risk and uncertainty.

In the following section, we will elaborate further on the three issues mentioned by Mellor above since all of them constitute potential problems leading to a divergence of objective and interest between the farmer and government.

Work-Versus Leisure

We have already mentioned that in a subsistence economy, land and family labour constitute the two main components of the factors of production but that family labour is a relatively more critical component. Labour in turn either opts for work or leisure. Farmers

are also concerned with their ability and efficacy of transforming their labour into material goods. [26] In this regard, much work have been done using the work-leisure framework and understanding the reasons behind choices made either for work or leisure is important to understand the means to increase productivity. For example, Mellor [27] gave the following factors which he considers farmers may use in deciding whether to work or not :-

a) unwilling to work extra hours for extremely low marginal returns (except when under extreme pressure of poverty) [28]

b) unwilling to work if there is a narrow range and relatively fewer availability of attractive and cheap consumer goods (which would lower the utility of money earned from increased production or work effort)

c) traditional attitudes towards consumption (which may further lower the utility of new forms of consumer goods)

d) backward technology (which lowers the productivity of labour and hence lowers the quantity of consumer goods and services which may be had for giving up a given quantity of leisure).

Hence, a complex set of factors will determine whether farmers will supply his labour in response to opportunities and incentives offered. However, inter-personal relationship among small farmers will determine the pattern of labour use. Small farmers tend to rely more-on other farmers than bigger farmers are. They tend to establish a network of inter-personal connections for purposes of support while larger farmers only buy labour and not rely on personal obligations. This is one of the methods or " survival algorithm " of the small farmers. This therefore implies that

incentives per se is not likely to have the desired effect of getting farmers to supply his labour. We need also to look into the complex relationship as outlined above before we are able to understand fully how farmers respond to incentives.

Security Versus Technical Change

Development in agriculture usually implies change and change which is often related to technical change which alters input-output relationships. However, the problem with technical change in subsistence agriculture is that planners and policy-makers, by their actions, always assume that although small farmers face numerous problems and constraints they have little difficulty in adopting an innovation. However, the greatest constraint facing the farmer when trying to innovate is the presence of risk and uncertainty. He is uncertain whether he would benefit from the new technology introduced. Whereas bigger and richer farmers may not be constrained by risk or fear, to the smaller farmers this fear is very real. (However, this does not mean that the larger and bigger farmers operate more efficiently than the small farmer). [29] Therefore, in making decisions about change affecting the small farmer, planners should not consider only the technical and financial probabilities associated with absolute gains or losses but should also consider the costs, anxieties and problems caused to small farmers in their attempt to modernise their farming practice and find out ways and means to lessen their burden.

Present Income Versus Future Income

The preference for either present or future income is an intertemporal problem faced by the small farmer just like any other investor. Most farmers who are poor have a greater preference for the consumption of present income rather than the saving for the future. This is because the immediate satisfaction of their wants and needs overide other considerations. However, the concern for the future is also important because it implies the replenishment of outmoded capital stocks and an addition to a nation's investible resources. The same rationale applies to the agricultural sector. But the problem is that future income and investment implies that there are adequate income and savings in the economy. Hence there is a need to strike a balance between the needs of the present and the desirability of investing for the future. But the prerequisite for this is the ability to procure greater productivity in the agricultural sector which would create the necessary surplus to finance economic development in general.

According to Mellor [30], in subsistence agriculture, the following factors are important in determining whether future or present income is preferred :-

a) attitude towards consumption

b) attitude towards security

c) sense of fatalism

d) present income levels

e) the existence of a capital market

Summary

From the above discussion, it is quite clear that there is a close relationship between farmers' values, objectives, his behavioural mode and his production decision. In the next section, we will examine more closely the small farmer's mode of behaviour and rationality in four main areas :-

a) how he allocates his scarce resources

b) how he behaves when controlling additional resources

c) his response to price changes, and

d) his response to technological changes.

5.0 ALLOCATION OF RESOURCES BY SMALL FARMERS

Economists are interested to find out exactly how the small farmer allocates his scarce resources. An understanding of this behaviour has important ramifications as far as policy prescription is concerned. For example, the policy prescription would differ if it were believed that farmers allocate their resources efficiently or otherwise. If farmers were seen to be efficient and tend to be maximisers (as neo-classical economic theory postulates) then measures taken to increase their productivity would be through research and technological innovations or through better usage of new inputs rather than through changing the farm environment. This would then enable the farmers to operate on a higher production function. However, if farmers are not maximisers but are instead optimisers and by implication operate inefficiently, then the measures that would need to be taken to increase production would be through actions like education, extension or other measures to improve the decision-making capacity of the farmers.

Schultz's Hypothesis

In fact, there is a great deal of controversy over the extent to which small farmers allocate their resources. For example, Schultz [31] and others are often associated with the " poor but efficient " hypothesis which states that subsistence farmers are poor not due to inefficiencies on their part (in the use of resources) but rather because of constraints in the kinds and quantities of resources that they have. Schultz says that traditional agriculture has attained a long-run equilibrium with

respect to the allocation of factors of production at the farmer's disposal. In this static condition, all opportunities to increase agricultural production has been exhausted. The result of studies done by Tax (1955), Hopper (1965) and others using the production function approach supported his hypothesis. Since all the opportunities within traditional agriculture have been exploited, the only means then to increase productivity would be through the usage of new technologies or new inputs. Schultz singled out investment in agricultural research and education and the use of a positive agricultural pricing policy to be important policy measures to transform traditional agriculture.

It is worth repeating here that this hypothesis rules out the possibility of increasing productivity through the reallocation of existing farm resources. This has important repercussions as far as policy measures to improve subsistence agriculture in the LDCs.

However, the Schultz hypothesis has been subjected to much criticism although it played a significant role in influencing the direction and content of agricultural research and training especially in the United States. The defect of this kind of hypothesis is that by advocating that agricultural production cannot be increased through the reallocation of existing resources, it led research efforts away from this direction and this tend to have bad consequences. Among the more vocal critics of the Schultz hypothesis was Lipton [32]. His criticism of Schultz may be summarised as follows :-

a) the high degree of risk and uncertainty facing the small farmer makes optimal resource allocation difficult

b) the theorem of economic optimality is static and only relate to the long-run

c) it is questionable whether Schultz concept of traditional agriculture have any operational relevance

d) it showed the limitations of production function analysis

Shapiro [33] also contended that the criteria of optimal allocative efficiency requires that the ratio of MVP to MFC (marginal factor cost) should equal to one, but he showed that approximately one-third of the ratios given by Schultz differed significantly from one and therefore contradicted the efficiency hypothesis. In addition, Clayton [34] mentioned that the empirical studies used to support the hypothesis was based on data derived from small and isolated samples of peasant farmers and many were not randomly selected. He concluded that it was thus quite incorrect to generalise on the basis of the above observations about farmer's behaviour.

According to Mellor [35] empirical studies of efficiency are subject to considerable hidden errors as follows :-

a) error in assumption about farmer's objectives, factor productivity and factor cost (which is reflected in the findings of inefficiency)

b) incorrect criteria and assumptions tend to show farmers acting inefficiently but in actual fact they may be efficient or vice versa

c) farmers may be efficient on average while all are individually inefficient.

In this regard, Mellor contended that the question therefore to ask is the extent to which variability in decisions and allocation

by farmers arise from inefficient allocation by many farmers and to what extent it reflect efficient allocation by individuals within context of different conditions.

Ghatak and Ingersent [36] argued that the Schultz hypothesis is weak since the choice of a neo-classical model to represent farmers' behaviour is inappropriate and also because Schultz did not distinguish between allocative and technical efficiency. However, we cannot say that a theory is weak because of its assumptions (in this case of the neo-classical model). The proper way to judge a theory is not by looking at assumptions but on its ability to predict.

Lipton's Hypothesis

An alternative to the Schultz's hypothesis was that postulated by Lipton [37] in which he hypothesised that peasant farmers are not maximisers but instead are optimisers. Hence, if this is true then their main concern is not with maximising profit (or minimising cost) but instead on maximising their utility. Lipton's main argument is that the allocative inefficiency of small farmers is a result of risk aversion or what he termed as a " quest of security " on the part of the farmers. He said that the variability and hence risk confronting the farmer is so high that a strategy of maximising profit would lead to disaster and that the farmers and their family could even starve. Hence to survive, farmers must pursue a lower variance strategy which considerably increase their security. Therefore, farmers must pay a high risk premium to insure against disaster which takes the form of a trade-off between

expected profit and an assured minimum yield. Lipton called this optimal strategy the " survival algorithm " by which farmers maximise utility and in pursuing this strategy, they tend to allocate their resources in such a way that there is a balance between profit, security and status.

Like Schultz, Lipton's hypothesis also made a great impact on agricultural research and thinking in LDCs although it was not as influential. Academicians and researchers took up the issue of risk and uncertainty in determining how farmers behave as if all the other factors were not important. According to Clayton [38] risk is by no means the sole factor in determining farmers' behaviour and that by assuming that risk is the prime determining variable, it tend to create a false impression that economic sub-optimality, allocation of resources and the choice of technique or product is a result of risk aversion alone on the part of farmers. Although yield variability (due to variable rainfall, pest, diseases, etc) may lead to risk-averse behaviour on the part of the farmers, their efects may differ considerably between different farmers.

As far as policy implications were concerned, both approaches had different policy prescriptions as widely practiced in LDCs. For example, the most basic policy implications which follows from the theory of profit maximisation farmer of Schultz is that small farm households make predictable adjustments to changes in the prices of farm inputs and outputs. Hence, the widespread use of policies of raising farm output prices or by lowering the cost of variable inputs are used. As for the latter Liptonian approach, the theory of the risk-averse farmer is associated with government interventions

designed to remedy the adverse impact of risk aversion on agricultural productivity and growth. For example policies prescribed include the provision of irrigation, crop insurance, price stabilisation schemes, etc. We believe that the approach to solve farmers problems should not rely exclusively in any particular school of thought. Both of the above approaches have their own advantages and we should work on the positive aspects of each. However, despite the predominance of policies in LDCs geared to solving the problems of poverty in LDCs using the above approches, the degree of success is not enough. Poverty is still widespread in the rural areas and the gap between the haves and haves-not seem to increase. This implies that other approaches to help solve the problem of rural poverty in LDCs need to be used. [39]

6.0 RESPONSIVENESS OF SMALL FARMERS TO ECONOMIC INCENTIVES

Response to Price

The issue of rationality of response farmers in LDCs to economic stimuli and incentives has been well documented in the literature. [10] A brief review here would be in order.

It was initially believed that farmers in LDCs were unresponsive to economic incentives and they instead demonstrated highly irrational and unorthodox economic behaviour, for example by working for less time when confronted by higher wages. In the light of these manifestations, traditional farmers were thus accused of being irrational, backward, conservative or even plain lazy and that they resist change and are against modernisation.

However, the early work of Ida Greaves [41] had already discounted the notion that smallholders reacted negatively to economic incentives. She claimed that the evidence showed positive response when account was taken of other productive activities open to the smallholders, e.g. off-farm income and non-monetaray aspects of alternative employment. Later studies done by Bauer (1948) and Bauer and Yamey [42] also rejected the notion of zero or negative response of farmers. For example, Bauer gave instances where farmers reacted positively to economic incentives, for example, by cultivating new crops, evading regulations which restricted their economic activities, etc. Jones [43] also tried to explain the unorthodox economic behaviour of African producers and concluded that " most explanations of unorthodox economic response in Tropical Africa rest upon notions about personality - individual economic aspirations and rationality - and about the structure of African

societies and the extent of trible ties and of economic ties ".

Ingersent and Ghatak [44] after reviewing a vast literature on supply response of farmers in LDCs concluded that on the basis of evidence available, farmers in LDCs tend to behave rationally in general, though there are a few exceptions, particularly in highly subsistence economies. In fact what has long been considered to be irrational behaviour on the part of farmers in LDCs is actually rational and perfectly sound decisions. For example, recommended fertiliser usage by extension workers were rejected by farmers not because they were not receptive to new ideas but merely because they were not appropriate of the circumstances of the small farmers. The recommended levels of fertilisers were only suitable for farmers operating under the most favourable physical and economic conditions. In other words, fertiliser recommendation rates were based on an " idealised " production functions. In summary, there is ample evidence that farmers in LDCs are price responsive (or exhibit high price elasticities) and act in a rational manner.

According to Mellor [45], in traditional agriculture, the aggregate response of agricultural labour force (rather than land) to price is more important. The response of labour to price change is a choice between work and leisure. However, the effect of price change is broken down into two effects, namely income effect and substitution effect. Note that income effect has the same effect as that of decreasing production (production-decreasing) and substitution effect has the effect of increasing production (production-increasing). Therefore, the less the income effect and the greater the substitution effect, the greater will be the

positive effect of price on production. However, the price response may not have the desired effect due to two factors. Firstly, the marginal utility of added consumer goods may be declining. (This is likely to happen if consumption pattern is traditional or new consumer gooods are not available. In fact, at the extreme this may lead to the phenomenon of the backward-bending supply curve of labour). Secondly, if the marginal physical product (MPP) of the additional labour is low or declining. (at the extreme, if labour has zero MPP, then price increase cannot lead to an increase in supply of labour). [46]

In most LDCs, the MPP of labour is usually very low. Hence, labour may only be supplied if the utility of consumer goods is very great or the disutility of sacrificing labour is very low. Hence, by implication, pricing policy will be more effective to effect change in agricultural productivity if the MPP of labour is high.

It has been argued that the low price responsiveness small farmers is because they are concerned with production for self consumption rather than for the market. Mellor referred this to the " subsistence-mindedness " of the farmers. Here two factors determine the relative emphasis that small farmers will give to non-subsistence production, namely price relationship and risk and uncertainty. In the first case, the price relationship is between that of the sale price of his crop and the retail price at which he procures his purchases. If there is a significant difference against his interest, then at a certain determined price, he will not respond at the price change by increasing production. In the second case, farmers tend to give priority for producing for their own

sustenance. In the face of price uncertainty, they will tend to favour production for subsistence rather than for the market.

Response to Technological Change and Innovation

The issue of farmer's acceptance of technical innovation has been the subject of much discussion in the literature. [47] Under normal circumstances, an innovation is taken up by a small farmer if the following conditions are fulfilled :-

a) it is cheap

b) it is technically feasible

c) it is reliable, and

d) it is economically feasible

e) farmers get ancilliary benefits from government agencies if they innovate, e.g. credit

f) non-economic factor, i.e. undertaking innovation is linked with prestige of being pioneers

Mellor [48] on the other hand, laid down three conditions for an innovation to be accepted. Firstly, is their desire for increased material benefit, secondly, their expectation that the innovation will increase their income and wealth and thirdly, the expectation that they will participate in an increase in wealth from the innovation.

However, in any discussion of technical innovation, the issue of risk and uncertainty will always come to the forefront. [49] Since the element of risk and uncertainty is very real, farmers are naturally very cautious in approaching it. Clayton emphasised that the uncertainty of outcome in farmers' decision-making is not

normally measurable (objective risk) but instead reflect farmers' personal judgement of the likely outcomes (subjective risk) or where probabilities cannot be assigned. [50] This is clearly seen, for example, in the case of fertiliser recommendation rates by extension agents. In this case, farmers tend to discount expected returns to factor inputs in terms of their own subjective risk assessment and hence adjust their factor intensity usage accordingly. Fig. 4.1 below describes the situation.

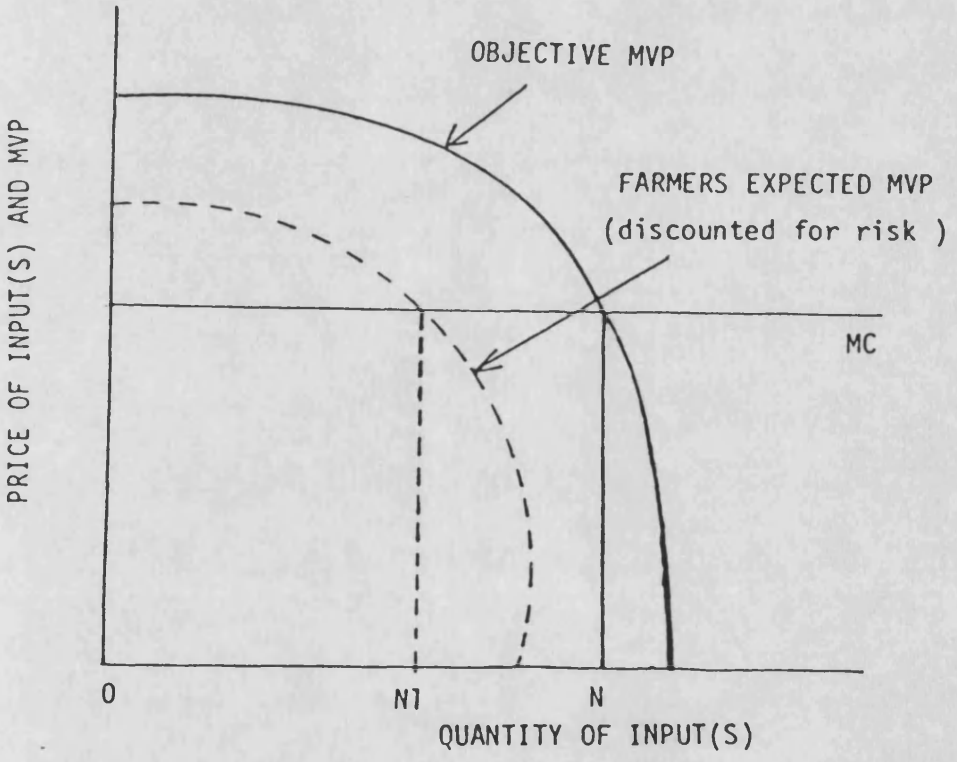


Fig. 4.1: A FACTOR-PRODUCT DECISION WITH RISK

Therefore what appears to be economic sub-optimality is in fact a rational response to the uncertainty of outcome. In addition, in the face of price uncertainty, small farmers tend to adopt a diversified farming system in order to spread the risk as widely as possible.To quote Clayton : " Farmers ..... devise farming systems which produce a lesser but more certain average expected income rather than a large but less sure average expected income ". [51]

Wharton [52] in his study of Philippines agriculture concluded that in order for small farmers to adopt new high yielding varieties of rice, two conditions were required. Firstly, the high yielding variety of rice should be more productive than the traditional variety. Secondly, and a sufficient condition is that the yield of the MV in poor season is higher than that of the TV. This is because the small farmer need to be assured that in bad seasons his position will not be worse off with the MV. Statistically, it means that not only must the mean yield of MV must be higher than that of the TV but also the negative standard deviation of the MV must be higher than the mean yield of TV in the poorer season.

7.0 SUMMARY

In this chapter, we have defined what is a small farmer in the context of LDCs and analysed their motivations, values and attitudes. We also discussed how the small farmer allocates his resources and his responsiveness to economic stimuli. From the analysis, it is clear that the constraints and resources that farmers face are very important factors in determining their

production decision-making. However, of greater importance is the fact that farmers' motivations, values, attitudes and objectives do indeed play a primary role in their mode of allocating resources and economic behaviour.

NOTES

1. In this chapter, we shall use the term small farmer synonymously with subsistence farmer, peasant farmer, traditional farmer or poor farmer. This is in contrast with the large, big or rich farmer.

2. C. R. Wharton Jr. (ed) (1970), Subsistence Agriculture and Economic Development, Frank Cass & Co. Ltd; pp. 15 - 16. The five economic criteria mentioned by Wharton include:-
a) scale of farm product ratio
b) hired labour or purchased factor input ratio
c) level of technology
d) income and levels of living
e) decision-making freedom
The five sociocultural criteria include:-
a) non-economic factors in decision-making
b) degree of 'outside' contact
c) nature of interpersonal relations
d) psychological differences
e) developmental criteria.

For other definitions of subsistence farmer, see P. Worsley (1984), The Three Worlds, Weidenfeld and Nicolson, London, Chapter 2, pp. 69-83; L. Malassis (1975), Agriculture and the Development Process,
Unesco Press, Paris; S. Ghatak and K. Ingersent (1984), Agriculture and Economic Development, Wheatsheaf Books, Chapter 2; J. Ennew, P. Hirst, K. Tribe (1977), " Peasants As An Economic Category ", Journal of Peasant Studies, Vol. 4 (4), July; E. M. Carpenter (1951), " The Small Farmer ", Journal of Agricultural Economics, Vol. 13 (1), June; T. Shanin (ed) (1984), Peasants and Peasant Societies, Penguin Books.

3. C. R. Wharton, Jr. (ed) (1970), ibid, p. 16

4. F. Ellis (1988), Peasant Economics: Farm Households and Agrarian Development, Cambridge University Press, pp. 233-34

5. For an assessment of why the small farmer remains backward, see for example E. Clayton (1983), Agriculture, Poverty and Freedom in Developing Countries, Mcmillan Press Ltd, Chapter 1; M. Lipton (1977), Why Poor People Stay Poor, Temple Smith, London. On the other hand, sociologists attribute rural poverty to unequal opportunities and unequal access to resources, for e.g. see B. B. Schaffer & Huang Wen-Hsien (1975), " Distribution and the Theory of Access," Development and Change, Vol. 6 (2).

6. For e.g. see W. Loehr and J. P. Powelson (1980), The Economics of Development and Distribution, Harcourt Brace Jovanovich, Chapter 11, pp. 261 - 263.

7. Definition of terms are as follows:-
- Goals can be defined as ends or states in which individuals desire to be or things he wishes to achieve.
- Values are more permanent in nature than goals and are less likely

to change with time and circumstances. They can be considered as principles of guiding individual actions.
- Motivations and attitudes are forces which influence an individual behaviour pattern.
Source: R. Gasson (1973), " Goals and Values of Farmers ", Journal of Agricultural Economics, Vol. 24 (3)

8. J. Viner (1925), " The Utility Concept in Value Theory," Journal of Political Economy, Vol. 33 (4), pp. 374 - 75

9. K. Lewin (1951), Field Theory in Social Science, Harper & Bros., New York, p. 25 as quoted in R. Gasson (1973), " Goals and Values of Farmers ", Journal of Agricultural Economics, Vol. 24(3)

10. R. Gasson (1973), ibid, p. 522. For other criticsms of neo-classical economic theory about individual behaviour and attitudes, see G. Katona (1977), Psychological Analysis of Economic Behaviour, Westport, Greenwood Press; A. Lewis & A. Furnham (1985), The Economic Man, Wheatsheaf Books.

11. For a discussion of whether profit maximisation is the prime objective of small farmers in LDCs see the following and other works already quoted in the text :
R. Gasson, G. Crow, A. Errington, J. Hutson, T. Marsden & D.M. Winter (1988), " The Farm As A Family Business: A Review ", Journal of Agricultural Economics, Vol., P. Worsley (1984), ibid., pp. 119-122; A.K. Sen (1983), ' The Profit Motive ', illoyds Bank Review, Vol. 147, pp. 1-20.

12. R. Gasson (1973), ibid, p. 527.
The four categories are listed as:-
i) instrumental
ii) social
iii) expressive, and
iv) intrinsic
See also P.N. Junankar (1980), " Do Indian Farmers Maximise Profits? ", Journal of Development Studies, Vol. 17 (1).

13. L. Tweeten (1970), Foundations of Farm Policy, University of Nebraska Press, Lincoln, p. 86.

14. M. Shahid Alam (1985), " Some Notes on Work Ethos and Economic Development," World Development, Vol. 13 (2), Feb.

15. I. Arnon (1981), Modernisation of Agriculture in Developing Countries, John Wiley & Sons, p. 405.

16. I. Arnon (1981), ibid., p. 405.

17. M. Gillis, D. H. Perkins, M. Roemer & D. R. Snodgrass (1983), Economics of Development, W.W. Norton & Co., N. York & London, pp. 27 - 31

18. E.M. Rogers, " Motivations, Values and Attitudes of Subsistence Farmers: Towards a Subculture of Peasantry " in C. R. Wharton, Jr.

(ed) (1970), Subsistence Agriculture and Economic Development, Frank Cass & Co. Ltd., p. 115.

19. G. Castillo, " A Critical View of a Sub-culture of Peasantry " in C.R. Wharton Jr. (ed) (1970), ibid., pp. 136-142; K. A. Busia, " Social Attitudes to Agriculture " in R. Robinson (ed) (1971), Developing the Third World, Cambridge University Press, pp. 129-134.

20. M. Todaro (1984), Economic Development in the Third World, 2nd edition, Longman, p. 273.

21. E. Clayton (1983), Agriculture, Poverty and Freedom in Developing Countries, Mcmillan Press Ltd., pp. 68-77.

22. E. Clayton (1983), ibid., p. 68-77.

23. E. Clayton (1983), ibid., p. 77.

24. A. K. Sen, " The Profit Motive ", reprinted in A.K. Sen (1984) Resources, Values and Development, Basil Blackwell, pp. 90-110.

25. J. Mellor (1970) , " The Subsistence Farmer in Traditional Economies," in C. R. Wharton Jr. (ed) (1970), op. cit., pp. 211-216.

26. J. Mellor (1963), " The Use and Productivity of Farm Family Labour in Early Stages of Agricultural Development," Journal of Farm Economics, Vol. 45 (3), August.

27. J. Mellor (1970), op. cit. pp. 213 - 214

28. M. Lipton (1983), Labour and Productivity, World Bank Staff Working Paper, No. 616 where he discussed the attitudes of the ultra-poor farmers in India.

29. For a discussion on the relative efficiency of small versus large farmers, see the following selected works:-
K. L. Bachman & R. P. Christensen (1967), " The Economy of Farm Size " , in H. M. Southworth & B. F. Johnston (eds.), Agricultural Development and Economic Growth, Cornell University Press, Ithaca; D. A. Berry & W. R. Cline (1979), Agrarian Structure and Productivity in Developing Countries, Johns Hopkins University Press, Baltimore; P. A. Yotopoulos & J. B. Nugent (1976), Economics of Development, Harper & Row, New York; J. Loup (1983), Can the Third World Survive, Johns Hopkins, pp. 165 - 169; A. V. Chayanov (1966), The Theory of Peasant Economy, Richard D. Irwin, Homewood, Ill; K. Bharadwaj (1974), Production Conditions in Indian Agriculture, Cambridge University Press; D. P. Chaudhri & A. K. Dasgupta (1985), Agriculture and the Development Process, Croom Helm, Chapter 5; R. Kallianpur & R. Diwan (1985), " Productivity Growth: Scale and Technology Analysis of Punjab Wheat Farmers ", Indian Journal of Quantitative Economics, Vol. 1 (1), G. A. Cornia (1985), " Farm Size, Land Yields and the Agricultural Production Function: An Analysis of Fifteen Developing Countries ", World Development, Vol. 13 (4).

30. This framework is adopted from J. Mellor's (1970), op. cit., pp. 213-216.

31. T. W. Schultz (1964), Transforming Traditional Agricultuure, Yale Universuty Press; J. Mellor (1970), op. cit.

32. M. Lipton (1968), " The Theory of the Optimising Peasant ", Journal of Development Studies, Vol. 4 (3), reprinted in I. Livingstone (1981), Development Economics and Policy, London, George Allen & Unwin.

33. K. H. Shapiro (1977), " Efficiency Differentials in Peasant Agriculture and their Implications for Development Policies " Contributed Papers Read at 16th International Conference of Agricultural Economist, Institute of Agricultural Economics, Oxford, pp. 87-98.

34. E. Clayton (1983), op. cit., p. 104.

35. J. Mellor (1970) op. cit., p. 217.

36. S. Ghatak & K. Ingersent (1984), Agriculture and Economic Development, Wheatsheaf Books.

37. M. Lipton (1968), ibid

38. E. Clayton, ibid., pp. 107-108.

39. See F. Ellis (1988), ibid, where he discussed five alternative theories of peasant economic behaviour as follows :-
i) Profit maximisation
ii) Risk-averse
iii) Drudgery-averse
iv) Farm household
v) Share-cropping

40. Some of the selected works about this area include :-
H. Askari & J. T. Cummings (1976), Agricultural Supply Response: A Survey of the Econometric Evidence, Praeger; S. Behrman (1968), Supply Response in Underdeveloped Agriculture: A Case Study of Four Major Annual Crops in Thailand: 1937 - 1963, North - Holland, Amsterdam; M. L. Dantwala (ed) (1970), " Symposium On Farmers' Response To Prices ", Journal of Indian Agricultural Statistics, Vol. 22, June; M. Lipton (1967), " Should Reasonable Farmers Respond to Price Changes? ", Modern Asian Studies, Vol. 1; P. A. Yotopoulos & J. B. Nugent (1976), Economics of Development, Harper & Row, New York;

41. I. Greaves (1935), Modern Production Among Backward Peoples, London. This is a study of colonial agricultures in the early part of this century - quoted in E. Clayton (1983), op. cit., pp. 98-99

42. P. T. Bauer (1948), The Rubber Industry, London and P. T. Bauer & B. S. Yamey (1957), The Economics of Underdeveloped Countries, Cambridge University Press, Chapter 7.

43. W. O. Jones (1960), " Economic Man in Africa ", Food Research Institute Studies, Vol 1

44. S. Ghatak & K. Ingersent (1984), op. cit.

45. J. Mellor (1970), op. cit., pp. 219-220.

46. J. Mellor (1970), op. cit., pp. 219-220.

47. See for example, G. K. Helleiner (1966), Peasant Agriculture, Government and Economic Growth in Nigeria, Richard D. Irwin, Chapter 3; H. P. Binswanger & V. W. Ruttan (1978), Induced Innovation, Technology, Institutions and Development, Johns Hopkins University Press, Baltimore; G. Feder, R. Just & D. Silberman (1981), Adoption of Agricultural Innovations in Developing Countries: A Survey, WBSWP, No. 444, The World Bank, Washington D.C.; M. Yudelman & R. Banerji (1971), Technological Change in Agriculture and Employment in Developing Countries, OECD, Paris; Per Pinstrup - Andersen (1982), Agricultural Research and Technology in Economic Development, Longman; R. W. Herdt and C. Capule (1985), Adoption, Spread and Production Impact of Modern Rice Varieties in Asia, IRRI.

48. J. Mellor (1970), op. cit., pp. 221-226; A.M. Tang (1974), " Economics of Innovation: Agriculture and Industry Compared ", Economic Essay, Vol. 5, National Taiwan University.

49. J. M. Wolgin (1975), " Resource Allocation and Risk: A Case Study of Smallholder Agriculture in Kenya ", American Journal of Agricultural Economics, Vol. 54 (4); M. Schulter and T. Mount (1974), Management Objective of Peasant farmer: An Analysis of Risk Aversion in the Choice of Cropping Pattern of Surat District, India, Occasional Paper No. 78, Cornell University, Dept. of Agricultural Economics; C. Wharton Jr. (1969), " Risk, Uncertainty and the Subsistence Farmer ", Development Digest, Vol. 7 (2); J. Roumasset (1976), Rice and Risk, North - Holland, Amsterdam.

50. E. Clayton, op. cit., pp. 92-93.

51. E. Clayton, op. cit., p. 94.

52. C. Wharton Jr. (1983), " Risk, Uncertainty and the Subsistence Farmer " in M.P. Todaro (ed), The Struggle for Economic Development, Longman, p. 237.

CHAPTER FIVE

AN OVERVIEW OF SMALLHOLDER AGRICULTURE AND THE ROLE OF SUBSIDIES IN AGRICULTURAL DEVELOPMENT OF MALAYSIA [1]

1.0 INTRODUCTION

Agriculture has always been the basic industry of Malaysia and is of very great economic, political and social significance. Taken together with forestry, fishing and animal husbandry, agriculture still dominates the economic scene of Malaysia in the 1980s. Although its relative importance has gradually declined in recent years because of structural changes in the economy, namely by the rapid growth of manufacturing sector, services and the development of a large oil industry, agriculture is still very important as a source of livelihood of many Malaysians. The critical role played by agriculture in the Malaysian economy is reflected by its contribution to GDP, employment, and the relatively high proportion of government expenditure devoted to it. Agriculture, especially the foodcrop sector is also important because of its supportive role in the industrialisation efforts of the country especially through the provision of labour and subsidised food to the urban sector.

In analysing agricultural development in Malaysia, it is often convenient to divide it into two categories, namely, the plantation and the smallholder sub-sector. [2] This dichotomy is essential because they are two highly contrasting modes of agriculture with the former being highly capitalised, greater productivity,

extensive usage of wage labour and relatively large size of holdings with widespread utilisation of modern management practices. [3] On the other hand, the smallholding sector, which is the traditional mode of farming is characterised by small size of holdings, low productivity, the low usage of capital and modern inputs and widespread use of out-dated and traditional means of production. The features associated with the smallholder sector outlined have been responsible for the stagnation and high incidence of poverty.

Objective of Chapter

The object of this chapter is to highlight the role of the smallholder sector and agricultural subsidies in the context of Malaysian agriculture development. This chapter will attempt to analyse the following related issues :-

a) the characteristic features of Malaysian agriculture,

b) the role and contribution of smallholders in Malaysian agriculture,

c) typology of government intervention in Malaysian agriculture

d) institutional support towards the smallholder sector, and

e) the role of agricultural subsidies in the smallholder sector.

2.0 CHARACTERISTIC FEATURES OF MALAYSIAN AGRICULTURE

Agriculture has been practised in Malaysia for a long time. [4] Before the advent of the British colonialist in the 1870s, the mode of agriculture was mainly of the traditional-subsistence type where the cultivation of foodcrops was geared mainly for home consumption. It was the British who introduced cash-cropping on a

large scale basis and established the plantation system which is a highly capitalised form of agriculture into the country. [5] The British initially experimented with various cash crops like coffee, pepper, etc. for the export market. However, most of them failed due to diseases. After this initial fiasco, rubber was introduced and it was destined to become the prime foreign-exchange earner for Malaysia. Gradually, through its diversification policy, other crops like oil palm, cocoa, pepper were introduced and today Malaysia is a major world producer for these crops.

Table 5.1 shows the contribution of agriculture in terms of GDP from 1955 to 1985.

TABLE 5.1: Malaysia: Industrial Origin of GDP For Selected Years (%)

Economic Sector	1955	1965	1975	1980	1983	1985
Agric.,Forest,Fishing	40.2	31.5	27.6	22.0	22.3	21.5
Mining & Quarrying	6.3	9.0	4.0	5.0	4.4	4.7
Manufacturing	8.2	10.4	16.4	21.0	18.9	19.7
Construction	3.0	4.5	3.8	5.0	5.5	5.8
Services	42.3	44.6	47.6	47.0	48.9	49.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Bank Negara (1979), Govt. of Malaysia (1981), p. 11; Govt. of Malaysia (1984), pp. 39 & 58.

Table 5.1 shows that agriculture plays a significant role in the Malaysian economy. For example, in 1955 the contribution of agriculture to GDP was 40.2 %, only to be outperformed by the services industry. However, as structural changes occurred in the

economy, the contribution of agriculture to GDP has been eroded and by 1980s its share declined to almost one-half of the 1955 rate. For example, in 1980 and 1985 it dropped to about 22 %. The consequences of this structural transformation is expected to have serious implications for the economy. For example, surplus labour from the agriculture sector is expected to be released to the industrial and service sectors. However, even though the relative share of agriculture to GDP has dropped, it is envisaged that it will continue to remain an important force for the next few decades.

TABLE 5.2: Malaysia: Employment Growth By Sectors, 1965 - 1990 (%)

Economic Sector	1965	1970	1975	1978	1980	1990
Agriculture	52.1	53.5	47.6	43.9	40.6	31.8
Mining & Quarrying	2.5	2.6	2.2	2.0	1.7	1.3
Manufacturing	8.4	11.1	13.1	15.8	15.8	19.0
Construction	8.0	7.8	9.1	9.6	10.0	10.0
Commerce	11.1	12.2	13.0	13.4	13.7	15.4
Services	17.9	15.7	17.0	18.0	18.2	21.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: E.K. Fisk, et. al. (1984), p. 136

Further evidence of the importance of agriculture in the Malaysian economy can be seen from its employment generating capacity. Table 5.2 shows the changing pattern of employment and indicates that a significant proportion of the work force is supported by agriculture. Although the proportion has dropped through the years, in absolute terms, the number of people employed

in agriculture is still large. For example, in 1965 about 1.4 million people which constituted about 52 % of the work force were employed in agriculture. Although the comparable figure for 1980 was reduced to 32 % it still involved about 2.1 million workers. This made agriculture the largest provider of jobs in the country.

TABLE 5.3: P. Malaysia: Employment By Race and Sector,1980-83

Sector	1980				1983			
	M	C	I	Total	M	C	I	Total
	..... %				.... %			
Primary	68	18	13	1,432,000	67	19	14	1,435,000
Secondary	40	51	6	1,167,000	40	50	9	1,292,000
Tertiary	49	40	11	1,423,000	50	39	10	1,636,000
Total	53	35	11	4,023,000	53	35	11	4,363,800

Source: Govt. of Malaysia (1984), Table 3.9, p. 96

Note: M = Malays; C = Chinese; I = Indians

Another reason why agriculture is so important in Malaysia is because of its ethnic polarisation. The majority of farmers in Malaysia are the politically dominant Malays who are the most deprived category of workers in the country. Table 5.3 shows the distribution of employment in agriculture by ethnicity. Malays, Chinese and Indians constitute the three main ethnic groups in multi-racial Malaysia with a sprinkling of other races. [6] The majority are the Malays who are rural based depending mainly on smallholding agriculture. The Chinese are mostly urban based and are concentrated in commerce and industry and estate agriculture. They

are also dominant in money lending, merchandising and marketing activities of rural smallholder agriculture. Indians, on the other hand, are mostly found either as estate labourers or in the service sectors of the urban areas. This concentration of races into the different sectors with differential levels of productivity has resulted in uneven distribution of income among the races. [7] For example, the mean monthly income of Malay households in 1970 was M$179 while that of Chineses and Indian households was M$387 and M$310 respectively. In the low income range of below M$100 per month, Malay households constitute 85 % while the Chinese and Indian households constitute 9.6 % and 4.9 % respectively. [8]

Another indicator of the primacy of agriculture in Malaysia is the proportion of public development expenditure devoted to it as Table 5.4 shows. In this regard it is important to note that all development policies in Malaysia is based on the New Economic Policy (NEP) as outlined in the Second and Third Malaysia Plans. [9] The overiding objective of the NEP is the promotion of national unity through a two-pronged strategy of the eradication of poverty by raising income levels and giving employment opportunities to all Malaysians irrespective of race and is to restructure Malaysian society through social engineering in order that the identification of race with economic function is eventually eliminated. Since a great proportion of the population live in rural areas and more than half of are dependent on low yielding agriculture, the government's priority has been to assist this sector to overcome poverty.

TABLE 5.4:Malaysia: Public Dev. Exp. By Sector,'76-80 & '81-85

Sector	TMP (1976-80)		FMP (1981-85)	
	(M$mil)	%	(M$mil)	%
(A)ECONOMIC	18,481	59	29,608	61
a)Agric. & Rural Dev.	6,464	21	7,986	16
b)Mineral Resource Dev.	21	0.1	28	0.1
c)Commerce & Industry	4,256	14	7,043	14
d)Transport	4,463	14	6,713	14
e)Communication	1,253	4	3,002	6
f)Energy & Public Util.	1,932	6	4,762	10
g)Feasibility Studies	92	0.3	73	0.2
(B)SOCIAL	5,495	18	10,614	22
(C)SECURITY	6,309	20	7,744	16
(D)ADMINISTRATION	862	3	894	2
TOTAL	31,147	100	48,860	100

Source: Govt. of Malaysia(1981), Table 13.1, pp. 240-43; Govt. of Malaysia (1984), Table 7.2, pp. 208-211

Note: TMP - Third Malaysia Plan; FMP = Fourth Malaysia Plan

Hence, agriculture and rural development have accordingly been accorded top priority in Malaysian development planning. For example in the Third Plan, agriculture was allocated M$6.5 billion which was 21 % of total development expenditure. This was the greatest single allocation to a sector. In the Fourth Plan although the allocation went down to 16 % and the amount allocated was M$8.0 billion. In addition, most of the international loans floated by Malaysia overseas were devoted towards the development of this sector. [10]

However, despite the apparently lavish and generous allocation to the agriculture sector since independence, agriculture continues to be the least developed and characterised with a high incidence of poverty. [11] This proves that financial committment alone is insufficient to develop the agriculture sector and guarantee that farmers livelihood would improve. The problem of poverty in Malaysia is a rural-agriculture phenomenon and widespread and concentrated among the landless farmers and those with uneconomic land holdings, the majority being Malays. Table 5.5 shows the incidence of poverty in Malaysia Peninsular Malaysia by rural-urban strata.

In Malaysia, the government uses the absolute poverty approach in planning and formulation of development policies. [12] In counting the numbers of poor households and measuring the incidence of poverty, the approach taken is by using the poverty line income concept. The poverty line income takes into account the minimum requirements of a household for three major components, namely food, clothing and other non-food components such as rent, fuel, power, and transport. All households which have an income below the poverty line income are considered as poor households while those with income above the poverty line are classified as non-poor households. The number of poor households expressed as a proportion of the total number of households then gives the incidence of poverty.

- Table 5.5 shows that rural poverty increased from 37 % in 1980 to 42 % in 1983. The high incidence of rural poverty is shown by the fact that as much as 86 % of total poor come from rural households.

TABLE 5.5 PENINSULAR MALAYSIA: INCIDENCE OF POVERTY BY RURAL-URBAN STRATA, 1970, 1980, 1983 AND 1985

Stratus	1970			1980			1983			1985		
	Total poor household (000)	Incidents of Poverty (%)	Percentage among poor (%)	Total poor household (000)	Incidents of Poverty (%)	Percentage among poor (%)	Total Poor household (000)	Incidents of Poverty (%)	Percentage among poor (%)	Total Poor household (000)	Incidents of Poverty (%)	Percentage among poor (%)
Rural	706	59	89	543	38	85	620	42	86	502	33	83
Agriculture	582	68	74	423	46	67	498	55	69	380	43	63
Rubber smallholders	227	65	29	169	41	27	248	61	35	158	39	26
Oil palm smallholders	2	30	*	2	8	*	2	7	*	1	6	*
Coconut smallholders	17	53	2	13	39	2	10	33	1	9	31	2
Padi farmers	123	88	16	76	53	12	75	54	11	78	58	13
Other agriculture	126	92	16	106	64	17	87	54	12	76	48	13
Fishermen	28	73	4	19	45	3	18	45	3	17	44	3
Estate workers	59	40	7	38	35	6	58	55	8	40	39	7
Other Industries	124	35	16	120	23	19	122	21	17	122	20	20
Urban	86	21	11	94	13	15	98	11	14	100	10	17
Mining	2	33	*	2	33	*	2	41	*	2	42	*
Manufacturing	20	24	3	24	13	4	28	13	4	30	12	5
Construction	6	30	1	6	17	1	5	14	1	5	12	1
Transport and Utilities	13	31	2	16	19	2	14	16	2	14	14	2
Trade and services	45	19	6	47	11	7	48	9	7	49	9	8
Total	792	49	100	636	29	100	718	30	100	602	24	100
Total number of household	1,606			2,193			2,371			2,497		

Note: *Value less than 0.5 percent

Source: Fourth Malaysia Plan; 1981-1985
Mid-Term Revision of the Fourth Malaysia Plan, 1981-1985

In addition, poverty incidence has also increased for certain groups, namely rubber smallholders and padi farmers. For example, in 1983, rubber smallholders accounted for slightly more than a third (34. %) of total poor households.

Many people criticised the government's approach to eradicate poverty in Malaysia. [13] Most of them believe that the measures taken were inadequate and were prone to fail because they were not radical enough. These critics preferred that the government should take more fundamental measures in order to benefit the poor in the development process. Land reform have been mentioned as one way because most farmers operate uneconomic size of land. For example, Peacock [14] observed that rural development in Malaysia had failed to solve rural poverty. He observed that the Third Malaysia Plan (the first Development Plan to identify poverty groups in Malaysia) did not appear to have benefited the poor. He contended that the failure of poverty groups to benefit from high growth rates can be explained by the concentration of growth in only certain limited sectors of the economy.

Summary

We have seen that the agricultural sector in Malaysia is indeed a very significant and critical component of the Malaysian economy. This is by virtue of its contribution to GDP, employment and resources devoted to it. It is also of concern to policy makers and planners because a great and significant proportion of the poor depend upon it as a source of livelihood. And finally, it is important because the Malays, who constitute the majority of the population and also mainly rural based and who control political power are the poorest segments of society. The continued support of the rural populace is usually the determining factor in getting votes, hence the " politics of agriculture " and the rural agricultural lobby is a very important issue in Malaysia.

3.0 ROLE AND CONTRIBUTION OF THE SMALLHOLDER SECTOR

Introduction

In Malaysia, the agricultural sector consists of three types of landholdings: plantations, state sponsored land development schemes, and individual smallholdings. [14] Table 5.6 shows the acreage planted in the principal crops by types of holding.

TABLE 5.6 : Acreage Planted in the Principal Crops by Types of Holding, Peninsular Malaysia, Selected Years, 1960-1975 ('000 ac)

Crop/Holding Type	1960		1965		1970		1975	
	Acres	%	Acres	%	Acres	%	Acres	%
(I)RUBBER:	3,889	66	4,328	66	4,331	61	4,188	55
Estates	1,934	33	1,859	28	1,598	23	1,392	18
Indiv. S/H	1,955	33	2,469	38	2,290	32	2,796	37
FELDA & SLS	n.a	n.a.	n.a.	n.a.	443	6	n.a.	n.a.
(II)RICE S/H	929	16	950	15	992	14	944	13
(III)OIL PALM	135	2	240	4	691	10	1,436	19
Estates	135	2	208	3	478	7	819	11
FELDA & SLS	n.a.	n.a.	32	1	213	3	617	8
(IV)COCONUT	520	8	507	8	527	7	567	8
Estates	80	1	68	1	55	1	44	1
Indiv. S/H	440	7	438	7	472	6	523	7
(V)MISCELL	452	8	479	7	515	7	405	5
TOTAL	5,925	100	6,504	100	7,056	100	7,540	100

Source: Adapted from Young, et. al. (1980), Table 8.5, p. 218

Note: SLS = State Land Scheme

The independent and unorganised smallholder sector which comprises about 68 % of agricultural landholding in Malaysia is the most important. The largest groups of smallholders are those in rubber, rice and coconut. On the other hand, private estates constitute about 30 % of the total acreage and concentrate on a few commercial crops like rubber, oil palm, coconut, cocoa, tea and pineapple. However, most rubber estates have switched to oil palm because rubber gave less profit. Since oil palm requires considerably less labour per acre than rubber and gives a better return, employment on estates has fallen on land formerly planted with rubber. Today estates account for less than a third of total employment in these two crops. Land development schemes, in which large numbers of individual settlers work under a common management, constitute about 10 % of the agricultural acreage in Malaysia in 1975 and produce mainly rubber, palm oil and cocoa. About 1.8 million acres have already been developed through land development schemes from 1960 to 1980. The Federal Land Development Authority (FELDA) established in 1956, the most important land development agency was responsible for opening up more than 50 % of the land schemes in Malaysia. Rubber predominated on FELDA schemes in the early years, but after 1965 oil palm became the most important crop. By the end of 1975, FELDA had settled about 33,000 families. [15] Other land development agencies include the Federal Land Consolidation and Rehabilitation Authority (FELCRA), the Rubber Industry Smallholders Development Authority (RISDA), State Land Development Boards and a number of private sector agencies.

Agricultural Activities of the Smallholders

We have seen above that the rural sector is predominant and significant in Malaysia. In 1980, 66 % of households were rural while in 1983 the figure dropped slightly to 62.8 %. [16] This figure represents nearly three-quarters of the total households in Malaysia. In this section, we shall concentrate our discussion on two major activities of the smallholders, namely in rubberand rice.

TABLE 5.7: Productivity of Land and Smallholder Labour Producing the Principal Crops, P. Malaysia, 1970

Crop & Land Type	Value-Added	Acre	V-A / acre		V-A / wkr.	
	(M$mil)	('000)	M$	% of Ave.	M$	% of Ave.
Rubber Smallholdings	628	2,733	230	76	1,194	66
Rubber Estates	655	1,598	410	135	3,325	185
Oil Palm Holdings(*)	269	691	389	128	6,114	339
Coconut Holdings(+)	103	528	195	64	2,512	139
Rice Farms	333	992	336	111	1,125	62
Total or Average	1,988	6,542	304	100	1,80	100

Source: Adapted from Young, et. al. (1980), Table 8.8.,p. 224

Notes: (*) = includes FELDA and estates

(+) = mainly smallholdings

Smallholders involved in rice and rubber are the largest agricultural groups in Malaysia. They are the also the least productive and manage to generate value-added respectively of M$1,125 and M$1,194 apiece in 1970, whereas the average value-added for all smallholders in the principal crops was M$1,801. Table 5.7

gives the productivity of smallholders in 1970.

Rubber smallholders constituted about 21 % of total households in Malaysia in 1975. Between 1960 and 1975 the output of rubber smallholders grew at an average annual rate three times that of estates. In 1973 smallholders surpassed estates in total production because of the switch of estates from rubber to oil palm and the relative improvement of the yields of smallholders which grew at an average annual rate of 5.6 % during 1960 - 75, while the rate of growth on estates was only 2.9 %. The yield of smallholders are now about 85 % those of estates. The relative improvement in the yield of smallholders have largely been the result of new planting and replanting with high yielding clones. For example, in 1965 about 50 % of the registered acreage of smallholders had been replanted but in 1976 it had risen to 67 %.

In 1979, the unorganised rubber smallholders accounted for 700,000 hectares or about 60 % of total rubber smallholders and supported about 270,000 families. Organised rubber holdings of FELDA, FELCRA and State land development agencies covered about 280,000 hectares and supported about 100,000 families. By racial distribution, Malays owned 63 %, Chinese 35 % and Indians 2 % in 1977. [17]

The average monthly income of rubber smallholders in 1977 was M$240. This is a result of large scale replanting of high-yielding rubber clones, increased use of fertilisers and yield stimulant as well as favourable rubber prices which averaged M$3.00 per kg. in the late seventies. However, despite this about 35 % of rubber smallholders still earned less than M$200 per month mainly due to

the small size of their holdings. [18] In fact the number of poor rubber smallholders have increased by 8 % between 1980 and 1983. (see Table 5.5) The exception in this case are the rubber smallholders in land development schemes who enjoyed a higher level of income due to the larger size of their holdings (average of 10 acres) and the fact that they are more organised. For example, in 1983, FELDA settlers earned an average net monthly income of M$451 which was very high by smallholders' standards. [19] In 1984, the smallholding sector is expected to contribute about 65 % of total national production while the estate sector the remaining 25 %. [20]

Rice farmers, on the other hand, constitutes one of the poorest groups in the country and made up about 16 % of all agricultural households in Malaysia in 1975. In 1979, 8 % of all households in Malaysia depended upon rice farming as their primary source of income, but rice accounted for only 2 % of GDP. [21] However, the importance of padi and rice sector lies in the fact that rice is the staple food and basic wage good in the country. In addition, padi is a major user of the country's land and labour resources while the majority of padi farmers, who are predominantly Malays, live in abject poverty. In fact, rice is grown more for subsistence than economic reasons which explains why the poverty rate among rice growers is so high.

The most important governmental activity in promoting rice farming has been the development of irrigation and drainage facilities. For example, the proportion of wet-rice fields that are double-cropped rose from 2 % in 1960 to 57 % in 1975. This

contributed to an increase in production of the off-season crops from 2 % to 40 % of annual rice production. In addition, improved inputs, along with extension and credit services that encourage and facilitate the use of these inputs, contributed to an average annual increase in yields of 2.2 % between 1955 and 1970 and more than 3 % between 1970 and 1975. [22]

In 1983, the estimated 138,000 households involved in padi production satisfied about 76 % of the national rice requirements. Despite enormous efforts to raise the standard of living and to eradicate poverty among them, a large number of padi farmers are still very poor. For example, in 1984, 55 % of padi farmers are poor compared to 53 % in 1983. Among the reasons for this high incidence of poverty include uneconomic size of farms, low productivity, flood and pest hazards and low prices. It is estimated that 90 % of single-crop padi farmers own plots that are less than 2.5 hectares in size which is the minimum size at which a farmer could earn a poverty line income. [23] In this regard, the government's effort to reduce the poverty level among padi farmers include the provision of drainage and irrigation facilities, fertiliser subsidies and price support schemes.

Summary

In the above account, we have identified and discussed two major categories of economic activities of the smallholders, namely in rubber and padi. We discussed briefly their features and contribution to Malaysian agriculture and found that most farmers and rubber smallholders live in poverty.

4.0 INSTITUTIONAL SUPPORT TOWARDS SMALLHOLDING AGRICULTURE

Introduction

The number of government agencies established to support smallholder agriculture in Malaysia is very large. [27] In relation to institutional support that the government gives to this sector, we can identify four main areas which stand out because of their financial size and overall effect on agriculture. These activities are mainly concerned with rubber and padi. The areas of concern are as follows :-

a) New planting or replanting of rubber

b) Regulating policies pertaining to rice

c) Land development and settlement

d) Drainage and irrigation

Rubber Replanting

In the rubber replanting programmes, the major thrust of the government's efforts towards improving the lot of the smallholders lies in large scale replanting and newplanting. This enabled the smallholders to achieve an annual production growth rate of 4.4 % during the decade 1971-80. About 277,700 hectares of rubber were replanted with high yielding rubber clones while about 192,000 hectares were newly planted with such clones during the same period. It is estimated that after replanting, a holding of 5 acres in size can generate an income of between M$348 - M$456 per month compared with M$104 - M$208 prior to replanting. The resultant increase in smallholders' income has reduced the incidence of poverty among rubber smallholders from 65 % to 41 % in 1980. [28]

To support the government's replanting efforts, the Rubber Industry (Replanting) Fund was established in 1952 whose management was later transfered to the Rubber Industry Smallholders' Development Authority (RISDA) in 1973. The funds for replanting consist of as cess (tax) collected at the rate of 9.9 cents per kg. on rubber exported from the country and it is this source that provides the bulk of the grants for replanting. From an initial grant of M$400 per acre in 1952, the replanting grant was reviewed and increased many times to reach M$2,200 per acre in 1980. [29]

To provide additional incentives to smallholders to replant their rubber trees, in 1981 RISDA introduced a scheme under which families with holdings of less than 2 hectares are provided with an interest-free loan of M$100 per month as subsistence allowance while families with holdings of between 2-4 hectares are given credit amounting to M$60 per month until the replanted rubber trees mature in 6 years time. By 1982, a sum of about M$11 million was spent under the scheme.

In its efforts towards consolidation of uneconomic holdings, RISDA also introduced the Group Replanting Scheme in 1972 with a view to reaping the economies of large scale holdings especially for smallholders with holdings of less than 2 hectares. By the end of 1982, 491 schemes covering 11,980 hectares and involving 7,883 participants were established throughout the country. [30]

RISDA also introduced mini-estates in 1978 to overcome the problem of uneconomic holding sizes. Under the scheme, adjacent smallholder lots are grouped together, replanted and converted into mini-estates with adequate infrastructure as well as processing and

marketing facilities. To encourage smallholders to participate in the scheme, living allowances are provided until the rubber trees mature.

In addition to the rubber replanting programmes, RISDA also provides a number of subsidies for the supply of fertilisers, weedicides, yield stimulants and credit for cover crops and other assistance under the SEPERDU scheme.

Padi Planting

For many decades, rice has been a crop of major political importance with self-sufficiency being a basic policy goal. Although complete self-sufficiency has never been reached over the years, nevertheless achievement levels have varied between 55-90 % between 1950 and 1986. For example, in 1956, Malaysia was 55 % self-sufficient but in 1974 it attained a 90 % self-sufficiency level. [31] The substantial increase in output over the 18 year period was largely due to the efforts of the government distribution and propagation of high yielding varieties and the development of irrigation which allowed double-cropping to be practiced. [32] In addition, the government also provided various inputs at subsidised prices, particularly of fertilisers and water for irrigation. However, despite these measures, after 1974 output has dropped and the level of self-sufficiency has not been maintained at 90 %.

Land Development

As for land development, FELDA has been financially the largest and most important public organisation in Malaysian agriculture. More than half of the total expenditure for agriculture went into land development and most of it channeled to FELDA. (Table 5.8). Through repeated experience, the land development techniques of FELDA have become systematic. When a decision is taken to develop a new land scheme, usually in virgin forest, contractors will clear the land, plant the seedlings, build the settler houses, roads, water supply, clinics, schools and other amenities. Typically, when these works are nearing completion, the new settlers arrive. During the time before the trees begin to mature, which is 5 to 7 years in the case of rubber, the settlers receive subsistence allowances. Each settler will have to repay FELDA eventually for the cost of the holdings which average about 14 acres per household and for the repayment of the allowances. Once production begins, FELDA is able to deduct part of the sales receipts of the individual settlers since they must sell all their output (rubber, oil palm, cocoa) to FELDA. Once all dues have been paid, the settler will be given the title to the holdings. With the exception of federal grants to cover administrative costs, FELDA receives much of its development funds in the form of loans from the Federal Government.

Settlers are chosen according to a point system and the criteria for awarding points are age, experience in agriculture, degree of landlessness and family size. Most points are given for those who are between 24 to 26 years old. There are usually more applicants than there are places and naturally there are long

waiting lists.

Since 1956 FELDA has developed over a million acres of land which is about half of the total new land brought into production. Until 1979, 100,000 families were settled in land development schemes specialising in rubber production of which FELDA settlers accounted for more than three-quarters. [33] There is no doubt that the efforts of FELDA has brought a significant decrease in rural poverty.

One of the major criticisms against the FELDA model is on cost considerations. According to Thillainathan the cost of settling a family are twice as high as those incurred by the Kelantan State Land Development Authority. [34] The Mid-Term Review of the Fourth Malaysia Plan estimated that the average cost of settling a family in FELDA schemes increased from M$37,500 in 1980 to M$51,200 in 1983. [35] Among the reasons for the high cost are the remoteness of the schemes, increased cost of labour and general cost increases. To reduce these cost elements, there have been suggestions that the settlers should participate more in the initial stages of preparatory work and hence much work presently done by contractors could be dispensed with.

Drainage and Irrigation

An area where the government has concentrated its resources is in drainage, irrigation and flood control where its involvement has been very extensive. As a result padi farmers have been able to double-crop their land and consequently led to big increases in padi production. Rice output has increased at an average rate of 4.1 %

during 1960-75. [36] The major rice growing areas that were double cropped was negligible in 1960 but in 1975 about 57 % of total area were irrigated. [37] The acceleration in areas converted to double-cropping occurred due to the completion of two major irrigation works in Malaysia in the 1960s, namely the MUDA project in north-west Malaysia and KEMUBU project in north-east Malaysia. These two massive projects were partly financed by the World Bank and were the first applications of large-scale irrigation for double-cropping of rice in Malaysia. They managed to approximately doubled the incomes of nearly 75,000 padi farmers in three of the poorest states in Malaysia, namely Kedah, Perlis and Kelantan. These projects were also responsible for reducing the country's reliance on rice imports from more than 40 % in 1967 to only 13 % in 1975. [38] The areas served by these two projects now account for nearly 60 % of rice production in Malaysia.

In addition to the two above mammoth projects, there are other smaller irrigation projects scattered throughout the padi growing regions of the country. The total area under drainage and irrigation facilities increased from 773,000 hectares in 1980 to 851,600 hectares in 1983 and this increased the number of farmers who benefited from the project from 136,800 families in 1980 to 240,000 families in 1983. [39] Table 5.8 summarises the public development expenditure for agricultural development in Malaysia. It is noticed that much of the allocation in the various programmes were subsidies. In addition, the number of institutions established by the government to help the farmers in the various programmes are multitudinal. Hence, the extent of governmental

intervention in Malaysian agriculture is indeed very extensive.

TABLE 5.8: M'sia: Public Devt. Expenditure for Agriculture '71-'85

Programmes	(1971-75)		(1976-80)		(1981-85)	
	M$m	%	M$m	%	M$m	%
(A)AGRIC.	-	5	-	8	7	-
-IADP	-	-	198	4	450	
-Crop Diversify	-	-	-	-	43	
-Exten. & others	-	-	-	-	74	
(B)INPUT SUBSIDY	-	-	102	2	431	5
-KADA	-	-	7		27	
-MADA	0.4		6		21	
(C)REPLANTING		8		4		7
-Rubber	146		198		479	
-Pineapple	4		12		13	
-Coconut	-		-		54	
(D)LAND DEV.	1072	59	2751	58	3554	44
(E)IRRIGATION	217	12	554	12	1472	18
(F)FORESTRY	9		26		33	
(G)LIVESTOCK	57		127	3	138	2
(H)FISHERIES	32		151	3	320	4
(I)AGRIC. RES.	25		69		78	
(J)AG. CREDIT.MKT	139	8	270	6	611	8
TOTAL	1794	100	4672	100	8014	100

Source: Govt. of Malaysia (1981), Table 6.2, p. 118;

Govt. of Malaysia (1984), Table 8.4, p. 246.

Item (D) includes regional development.

5.0 TYPOLOGY OF GOVERNMENT INTERVENTION IN MALAYSIAN AGRICULTURE

We have seen that the government is actively involved in promoting the agriculture sector in Malaysia. Most of the intervention policies are in the form of of price incentive schemes including subsidies. According to a recent World Bank study [40] the intervention measures in Malaysian agriculture may be classified under five main headings :-

a) measures that affect net income from farming by changing farm revenue

b) measures that affect net income from farming by changing costs of production or marketing

c) measures to promote productivity, the adoption of new technology, or crop diversification

d) measures to stimulate agro-based non-farm activities; and

e) measures to affect the consumption of agricultural commodities.

We shall briefly discuss the above measures. Interventions that increase or reduce farm revenues operate mainly at the level of the Federal Government. The most important measures are the padi price supports operated by the National Padi and Rice Authority (LPN), which consist of a guaranteed minimum price (currently at an average of M$466/ton), coupled with an additional subsidy operating through the extension of a cashable coupon (M$164/ton). The other measures are export and import taxes. As for measures that affect farming costs, by far the major part of expenditures on subsidies is on programmes that directly reduce the cost of inputs. Hence, input subsidies are very widely used and cover all inputs in farming and are either directly administered through grants of cash or

are either directly administered through grants of cash or materials, or implicitly administered through incomplete cost recovery or debt forgiveness. For example, the Ministry of Agriculture administers the padi fertiliser subsidy which consists of grants in kind of free fertiliser to padi farmers in the country. The third category of intervention measures are those that promote productivity, new technology adoption and crop diversification. Official intervention has greatly aided this process through for example the establishment of a large number of scahemes, e.g. the rubber replanting schemes. Also interventions can take the form of income maintenance grants or subsidised credits to smallholders for some tree crops with long maturation periods, during which time the level of farm income may drop quite sharply. For example, the Sepentas schemes organised by RISDA. The fourth measure include a number of schemes to encourage for example the development of agro-industries or the downstream processing of agricultural commodities, e.g. the tax exemption of palm oil refining. The major intervention policy of the last category is through the licensing and regulation of margins for millers, wholesalers and retailers in the rice trade.

We shall now confine our discussion on the padi and rubber sector because most of the government effort is concentrated on these two sectors. For example, out of five measures mentioned above, four are applicable to the rubber and rice sector. Table 5.9 summarises all the intervention measures for rice and rubber sector.

Table 5.9: Price Intervention Schemes in Padi and Rubber Sector

Intervention Schemes	Crop	Measures	Agency
Change Farm Revenue	Padi	Price Support/GMP	LPN
		Price Subsidy	LPN
		Padi Buffer Stock	LPN
	Rubber	Income Support	RISDA
		Sepentas Scheme	RISDA
		Buffer Stock	MOTI
Change Cost of Prod.	Padi	Fertiliser Subsidy	DOA/LPP
		Farm Cult. Subsidy	LPP
		Irrigation Water Charges	DID
	Rubber	Credit Subsidy	RISDA/BPM
		Agric. Input Subsidy	RISDA
		Market/Process Subsidy	MARDEC
		Market Assist. Subsidy	RISDA
		Input Credit Subsidy	BPM/LPP
Promote Productivity	Padi	Agric. Mechan. Assist.	LPP
Adopt New Technology		Padi Rehabilitation Grant	DOA
Crop Diversification		Padi Cult. For Fishermen	DOA
	Rubber	Replanting Grant	RISDA
		Rehab. Assist. For S/H	RISDA
Affect Consumption of Agricultural Commodity	Padi	Storage & Milling Subsidy	LPN
		Rice Transhipment to W. M'sia	LPN

Source : World Bank (1984), Vol. 3, Annex 2

From the above account, it is thus very clear that government assistance to the padi and rubber sector is very extensive and widespread. In fact this is one of the reasons why we are focussing our study on these two crops.

6.0 SUBSIDIES IN MALAYSIAN AGRICULTURE

Introduction

Basically, the objective of a subsidy programme is either to stimulate production or to redistribute income or both. Subsidies, in theory, are supposed to offer temporarily at least a partial corrective measure to agriculture in the short run. They are essentially fiscal measures instituted by the government to assist the agricultural economy which consist of overwhelming numbers of subsistence farmers to overcome the bottlenecks of production and marketing. Subsidies can also be considered as an instrument of inter-personal transfer of resources from an advanced sector to a backwark sector. The acceptable social justification for such a transfer is that it would eventually lead to a more equitable distribution of income. As to the form that it might take, subsidies can be either reimbursements of part of the cost of an input or making available inputs at lower prices or at completely no cost. In addition, subsidies may be explicit or implicit. Explicit subsidies are those that can be readily identifiable and quantifiable like fertiliser subsidies, price subsidies, transport subsidies, etc. while implicit subsidies are more difficult to quantify, for example subsidies in agricultural research, irrigation rates, etc. From this it is clear that subsidies have got two critical functions, that of allocative and a redistributive one. In Malaysia, we can see that both of the above functions are well served by agricultural subsidies.

Evolution of Agricultural Subsidies in Malaysia

Fertiliser was the first input item to be subsidised in Malaysia in the 1930s by the colonial agricultural administrators. This was done in order to popularise the use of non-organic fertiliser among padi farmers. Although the subsidy was withdrawn after a few years it was unprecendeted in the development history of the country. Replanting subsidies was started in the 1950s and have since been responsible for the massive replanting of rubber in Malaysia.

Afifuddin contended that the conventional agricultural development strategy of the government revolved around two significant components,namely the difussion of innovation and organisational development. [41] Various organisations, for example the Department of Agriculture, Rubber Research Institute of Malaysia and other agencies were responsible to diffuse modern agricultural technology among the farmers and this was expected to increase yield and productivity of farmers. However, the above efforts failed to produce the desired results and productivity was not improved. This was true for example of the padi sector. Among the reasons why the new technology was not widely practiced was because the farmers were constrained by the high costs of the new technology. [42] Hence, to facilitate the diffusion of these new technology, the government launched various subsidy schemes to enable farmers to utilise these new inputs. For example to encourage traditional farmers to use inorganic or chemical fertilisers, fertiliser subsidy was introduced in 1930s. The same rationale applied to the rubber sector where no replanting would be undertaken

by the smallholders unless the government extended some form of assistance in the form of grants or subsidies to cover partly the cost of replanting and to cushion the effects of a temporary non-production during the replanting stage. On the issue of price subsidies for rice, it was instituted essentially to give added incentives to farmers to sustain a reasonable level of output and to fulfil the requirements of self-sufficiency in food production.

Definition of Agricultural Subsidies in Malaysia

Agricultural subsidies in Malaysia can be defined as falling under the following categories : [43]

i) replanting grants

ii) input subsidies (subsidised fertilisers, pesticides, planting materials, credit at low interest rates, etc)

iii) subsidies given through the provision of drainage and irrigation facilities to farmers at charges which do not cover the capital and operating / maintenance costs of the schemes

iv) price support policies by which farmers receive a guaranteed price for their output regardless of the prevailing market price

v) exemptions given to agricultural producers from payment of import duties, surtax, sales tax or excise taxes

vi) other subsidies given to agricultural producers through the activities of public sector agencies involved in production, marketing and land settlement, such as FAMA, FELDA and FELCRA.

TABLE 5.10: Subsidy Expenditure in Relation to Federal Government Expenditure, 1973-83, Malaysia (M$million)

Year	Sub. Exp.(1)	RE/OE(2)	TE(3)	%(4)	%(5)
1973	247	3,341	4,447	7.3	5.5
1974	331	4,315	6,167	5.4	5.3
1975	402	4,900	7,013	6.9	5.7
1976	368	5,828	8,162	6.2	4.5
1977	469	7,398	10,536	6.3	4.5
1983*	1,428	n.a.	n.a.	-	5.6

Note: (1) = Subsidy exp.; (2) = Recurrent/Operating exp.; (3) = Total exp.; (4) = Subsidies as percentage of recurrent exp.; (5) = Subsidies as percentage of total exp.;

* For 1983 - Subsidies as portion of total exp. = 5.6 %
- Subsidies as portion of federal exp. on agric., forestry & rural development = 63.3 %
- Subsidies as portion of estimated GNP = 2.1 %

Source: Kelim (1980), p. 70-73
World Bank (1984), Vol. 1, p. 39

Table 5.10 shows the extent and scope of agricultural subsidies in Malaysia. (For details of agricultural subsidies in Malaysia see Statistical Appendix For Chapter 5) Total agricultural subsidies rose annually between 1973 and 1977, except for a temporary drop in 1976. In 1977 they totalled an estimated M$469 million, twice as much (in current prices) as in 1972. The amount disbursed for various types of subsidies amounted to more than M$1.4 billion in

1983. Total and recurrent Federal Government expenditure have risen every year and in 1977 were over twice the 1973 levels. As a result the trend seems to be for agricultural subsidies to represent a declining proportion of total Federal expenditure. Except for 1975 and 1977, they amounted to 4.5 % ot total government expenditure and less than 6 % of recurrent expenditure.

Subsidy Mentality

In Malaysia, the concern for general attitude change among the Malays was voiced in the 1960s and 1970s by various quarters. [44] At that time, the issue was not specifically referring to dependence on subsidies but more on self-reliance and the creation of an enterprising and innovative spirit among the Malay population who were relatively backwards when compared with the non-Malays. However, the government began to take a critical stand on the heavy reliance of farmers, who are mainly Malays, on government subsidies in the 1980s. By the decade of the 1980s, subsidisation policy was already an integral part of the agricultural development strategy in Malaysia as we have seen above. For example, in 1981, commenting on the ineffectiveness of subsidy schemes for fishermen, the Fisheries Development Authority quoted in a report that " ..... the government cannot and should not continue to pour in millions of dollars to perpetuate the dependency syndrome among the fishermen. The days of subsidy must be balanced with productivity and self-reliance. The question of equality without progress must give way to efficiency and the enterprising few who could stimulate the fisheries economy to benefit the larger

majority ". [45] The barrage of criticisms against over-dependence of farmers on subsidy began to gain momentum. In 1982, the Cabinet Committee on the National Agricultural Policy [46] had already voiced its concern that " in Malaysia, there has been an overt reliance on subsidies in the past and present and signs are that there are going to be little slackening off in the near future as indicated in the allocations for the Third Malaysia Plan (1976-80)". The report added that from their humble beginnings as basic incentives for the adoption of new technologies and activities, subsidies have been increasingly proposed and used as a multiple objective policy instrument which included the following stated objexctives :- [47]

i) to increase productivity and income

ii) to stimulate production of selected crops

iii) to develop specific farming areas or regions

iv) to eradicate poverty, and

v) to reduce income inequality

What was more alarming was that it has been fashionable to link the stated objectives of most subsidy schemes, somewhat arbitrarily, to those of the New Economic Policy. The report added that the impact of the various subsidy schemes were not evident. It confessed that the generous allocations for subsidies in the past with little apparent concern about their subsequent effectiveness was conditioned by the situation then (and that the government could afford it) where most of the farmers were operating at subsistence or semi-subsistence levels; ambitious and costly development programmes were few and there were less competition for development

funds and the general public were less concerned. [48]. Hence, under such circumstances subsidies flourished and is looked upon as the quickest (although not necessarily the most efficient) means of internal transfer to the less well to do. But the situation has changed and farmers are now more commercialised and there is greater competition for development funds. Hence, there is a need to change the old ways. Hence, the report felt that there is a basic need to question whether the provision of subsidies is the most appropriate approach from amongst alternative policy instruments. In addition, proper coordination of the various agencies providing subsidies are imperative.

In line with the above concern, the government commissioned the World Bank to study the whole system of price incentives in Malaysian agriculture in 1984. [49] The study concurred with the general findings of the Cabinet Committee report and found that agricultural subsidy programmes in Malaysia is extensive and widespread and badly managed and called for a complete overhaul and rationalisation of the subsidy administration programme. In consonance with the findings of the World Bank Report, the Malaysian government declared in the Mid-Term Review of the Fourth Malaysia Plan as follows :-

" It is the rural sector that substantial adjustments need to be made to the current strategy for agricultural development if further progress is to be made in alleviating poverty and raising the standard of living of the rural households ..... The role of subsidies in agricultural development will be progressively reduced and this will assist in the eroding of the subsidy mentality among

farmers. " [50]

In fact this is the official stand of the government as far as agricultural subsidies is concerned. However, despite this stiff position against the too liberal use of subsidies in the agricultural sector, the government views that subsidies could still play a positive role in the agricultural development of Malaysia if it were applied efficiently to selective areas. Hence, not all subsidies would be reduced or phased out but only those that apparently have not benefited the intended target groups would be reviewed. However, some critics have expressed their doubts as to whether subsidy policies are the best ones under present circumstances. [51]

However, new policy directions of the Malaysian government towards the agricultural sector will influence to a large extent the continuation or dissolution of the subsidy system that is being practiced currently. In this regard, in 1984, the government announced the new National Agricultural Policy (NAP). The basic objective of the NAP is the maximisation of income from agriculture through the efficient utilisation of resources and hence make the revitalisation of agriculture possible and making its contribution to overall economic development of the country more pronunced. The focus for the maximisation of farm income lies through raising the productivity of traditional export crops, the development of new crops and the production of food and industrial crops.

In addition, the MTR of the Fourth Plan categorically stated that agricultural subsidies will be critically reviewed. In this regard the statement below is very pertinent :

" Agricultural subsidies have claimed a substantial amount of the financial resources of the government. The role of agricultural subsidies in agricultural development will need to be reviewed, not only because of the tightening of the financial resources of the government but also because of the long-term effect of subsidies on the farming community. An important task in the years ahead will be the need to progressively reduce the dependence of farmers on subsidies, i.e. to eliminate the subsidy mentality which has been part of the agricultural system in the country. The continuation of an extensive system of subsidy is eroding the will of the farmers to be more independent, self-reliant and to raise their productivity and income by utilising their own resources, rather than relying excessively on the support of the government." [52] The Fifth Malaysia Plan launched in 1986 continued to emphasise on rationalising the extent of government involvement in subsidies by saying that " .... Efforts to reduce the heavy reliance on the government for assistance in promoting development and the predominance of direct involvement of public agencies in production and marketing will be stepped up. Where appropriate, subsidies will be gradually reduced and replaced by credit to meet financiall cash-flow constraints in agricultural activites. " [53]

7.0 SUMMARY

In this chapter we have discussed the contribution of agriculture in the economic development of Malaysia. We have also analysed the role of the smallholder sector in two specific areas and found that although the contribution of smallholders is important, they are the poorest category of workers in the country. The institutional support of the government towards smallholder agriculture is tremendous. However, this apparently did not manage to uplift the majority of smallholders above poverty levels. We then briefly sketched the typology of government intervention in Malaysian agriculture. In the last section we surveyed the role of agricultural subsidies in Malaysia and found them to be extensive and cumbersome and inefficiently administered. In view of these defects, the government declared its position with regard to subsidies and hopes to rationalise the system to manageable proportions. Subsidies in the future are expected to be used on a selective basis. In the subsequent chapters, we will analyse the role of subsidies in the rubber and padi sector and its effectiveness in achieving the goals they were set for.

NOTES

1. Malaysia is a federation of 13 states comprising 11 states in Peninsular Malaysia (West Malaysia) and the states of Sabah and Sarawak (East Malaysia). This chapter deals mainly with Peninsular Malaysia.

2. The officially defined division between estates and smallholdings has for many decades been fixed at a figure of 100 acres (40 ha), in which areas greater than 100 acrea are defined as estates and areas below 100 acres defined as smallholdings. Needless to say this definition is arbitrary and many smallholdings are less than 10 acres.

3. See P.P. Courtenay (1980), " Some Trends in the Peninsular Malaysia Plantation Sector: 1963-1973 " in J. C. Jackson & M. Rudner (eds), Issues in Malaysian Development , Heinemann Educatonal Books (Asia) Ltd., for a discussion on the usefulness of the plantation sector.

4. See A. Halim bin Ismail (1970), Some Economic Aspects of Peasant Agriculture in Malaya, Ph. D. Thesis, University of Oxford, Chapter 2, where he sketched the historical evolution of agriculture in Malaysia.

5. See M. Rudner (1980), " Agricultural Policy and Peasant Social Transformation in Late Colonial Malaya ", in J.C. Jackson & M. Rudner, ibid. for an account of British policy on agriculture in Colonial Malaya.

6. In the 1980 Population and Housing Census, Peninsular Malaysia had a total population of 11,426,600 people, of whom 55.3 % were Malays, 38.8 % were Chinese, 10.2 % Indians and 0.7 % others. See source Government of Malaysia (1984), Mid-Term Review of Fourth Malaysia Plan (1981-85), Government Printers, p.122

7. The distribution of population between rural and urban strata by ethnic group for 1980 was as follows:-

Race	Rural		Urban		Total	
	('000)	(%)	('000)	(%)	('000)	(%)
Malays	4,710	66	1,606	37	6,316	100
Chinese	1,699	24	2,166	51	3,865	100
Indians	686	10	485	11	1,171	100
Others	42	0.6	32	0.8	75	100
Total	7,138	100	4,289	100	11,427	100

Source: Adapted from Government of Malaysia (1984), Table 4.4, p. 123

8. Government of Malaysia (1973), Mid-Term Review of Second Malaysia Plan (1971-75), Government Printers, Kuala Lumpur.

9. The New Economic Policy (NEP) was launched after the 1969 race riots. It was incorporated into the Second Malaysia Plan (1971-75) and forms the basis of all policy measures undertaken by the government in all its five year development plans. It seeks to

redress poverty and to restructure society through a time horizon of 30 years (1970 - 90). For an account of its achievements in the various five year development plans, see the relevant chapters in the documents. For a critical assessment of the NEP, see David Lim, "The Political Economy of the New Economic Policy in Malaysia" in David Lim (ed) (1983),Further Readings on Malaysian Economic Development, Oxford University Press, Kuala Lumpur.

10. Total loans approved to Malaysia by international lending agencies up to June 1984 was US$1,583.98 million for 56 projects. The sectoral breakdown of the loans is as follows :-

Sector	No. of Projects	Total Loans(US$m)	(%)
Agriculture	23	692.80	43.7
Transport/Com	8	217.75	13.7
Utilities	5	66.70	4.3
Energy	10	411.80	26.0
Industry	2	16.32	1.0
Education	6	156.74	9.9
Health	2	21.87	1.4
Total	56	1,583.98	100.0

Source: Ministry of Finance (1984), p. 45

11. Many studies on poverty have been done on Malaysia both by the government and non-governmental circles. Some of the important works are cited below :-
S. Anand (1978),Income Inequality and Poverty in Malaysia: Measurement and Decomposition, Oxford University Press; U.A. Aziz (1975), Footprints on the Sands of Time: The Malay Poverty Concept Over Fifty Years From Zaaba to Aziz, Penerbitan Universiti Malaya, Kuala Lumpur; L.C. Lean (1974), The Pattern of Income Distribution in West Malaysia, 1957-70, Geneva, I.L.O.; E.L.H. Lee, " Rural Poverty in West Malaysia: 1957-70 " in I.L.O. (1977), Poverty and Landlessness in Rural Asia, Loussare, Impremeries Reunies, pp. 189-202.

12. For an elaboration and criticism of the concept of poverty line income see W. Bussink, " Employment and Income Distribution in Peninsular Malaysia ", in K. Young, et. al. (eds) (1980), Malaysia: Growth and Equity in a Multi-Racial Society, John Hopkins Press, Baltimore and London and Zainal Aznam Yusof (1986), " Concept, Profile and Incidence of Poverty ", ISIS First National Conference on Poverty, Kuala Lumpur.

13. See for example the works cited below :-
S.A. Baharuddin (1976), " Second Malaysia Plan - Its Theoretical Orientations - An Evaluation and a Critique ", Paper Presented to Malaysian Economic Association Convention; S.A. Baharuddin (1979), " The Development of the Underdevelopment of the Malaysian Peasantry ", in Journal of Contemporary Asia, Vol. 9 (4); L. Corner (1983), " The Persistence of Poverty: Rural Development Policy in Malaysia ", Kajian Malaysia, Vol. 1 (1); F. Peacock (1980), " The Failure of Rural Development in Malaysia ", in J.C. Jackson & M. Rudner (1980), op. cit., Sukor Kassim (1984), " Land Reform: Options and Realities ", in L.L. Lean & C.P. Lim (ed), The Malaysian Economy at the Crossroads, Malaysian Economic

Association; Syed Husin Ali (1986), " Poverty: Social and Political Dimensions " ISIS First National Conference on Poverty, Kuala Lumpur; Salleh bin Ismail (1986), " Programme and Policies on Poverty Eradication in Peninsular Malaysia: An Assessment ", ISIS First National Conference on Poverty, Kuala Lumpur.

14. New land development schemes are essentially smallholdings organised together under a central management and operates on an estate basis. This is in contrast to that practiced by traditional smallholders which are mainly operated on an individual basis and less organised. For an assessment of land development schemes in Malaysia, see N. Benjamin (1978), " The Role of Land Settlement in the Economic Development of West Malaysia: 1957-70 ", Development and Change, Vol. 9, pp. 581-598.

15. K. Young, et. al. (eds) (1980), ibid, pp. 217-218

16. Calculated from Table 3.2 of MTR of FMP, p. 80

Stratum	1980	1983
	..... '000	
Rural	1,449.5	1,489.5
Urban	743.3	881.2
Total H/H	2,193.0	2,370.7

17. Ministry of Finance (1983), Economic Report, 1983/84, Vol 12, National Government Printing, Kuala Lumpur, p. 167.

18. Ministry of Finance (1983), ibid, p. 168

19. Ministry of Finance (1983), ibid, p. 168

20. Ministry of Finance (1984), Economic Report, 1984/85, Vol. 13 National Printing Department, Kuala Lumpur, p. 117

21. K. Young, et. al. (1980), op. cit., pp. 218-219

22. Ministry of Finance (1984), ibid, p. 175

23. Ministry of Finance (1984), ibid, p. 175.

24. Ministry of Finance (1984), ibid, p. 176

25. See article in Far Eastern Economc Review, June 21, 1984

26. Government of Malaysia (1984), op. cit, p. 15

27. See P. Thillainathan (1976), " Malaysia " in N. Truong (ed) (1976), The Role of Public Enterprise in National Development in Southeast Asia, Regional Institute of Higher Education and Development, Singapore where Thillainathan examined the role of public enterprises in the implementation of the New Economic Policy and Bruce Gale (1983), Politics and Public Enterprise in Malaysia, Kuala Lumpur, Eastern Universities Press.

28. Ministry of Finance (1983), ibid, p. 168

29. Ministry of Finance (1983), ibid, p. 168

30. Ministry of Finance (1983), ibid, p.168

31. Under the National Agricultural Policy, the government decided that the level of self-sufficiency in rice is to be kept at a level of 80-85 %. See Mid-Term Review of Fourth Malaysia Plan, pp. 244-45.

32. R.M. Goldman (1975), " Stable Food Self-Sufficiency and the Distributive Impact of Malaysian Rice Policy " Food Research Institute Studies, Vol. 14 (3), pp. 251-293.

33. Ministry of Finance (1983), op. cit., p. 167

34. Quoted in J. Meerman (1979), ibid., p. 243

35. Government of Malaysia (1984), op. cit., p.232

36. K. Young, et. al. (1980), op. cit., p.48

37. K. Young, et. al. (1980), op. cit., p. 49

38. K. Young, et. al. (1980), op. cit., p. 49

39. Government of Malaysia (1984), op. cit., p. 40

40. World Bank (1984), Sector Report Malaysia : Incentive Policies, Vol. 1, Main Report, pp. 18-21 & Vol. 3, Annex 2.

41. Afifuddin Omar (1984), " Program-Program Pembasmian Kemiskinan Diluar Bandar ", Seminar Kemiskinan Luar Bandar, 23 April 1983, Wisma Negeri, Alor Setar, Kedah

42. Nayan Ariffin (1975), Factors Associated With the Malay Peasant Farmers' Acceptance of the Agricultural Practices Recommended by Extension Ph. D. Thesis, University of Wisconsin.

43. Kelim & Economic Consultants Ltd. (1980), Review of Agricultural Prices, Taxes and Subsidies in Malaysia, Vol. 1, Main Report, p. 42.

44. Among the studies conducted in this area include : Senu Abdul Rahman, et. al (1971), Revolusi Mental, Penerbitan Utusan Melayu, Kuala Lumpur; B.K. Parkinson (1975), " Non-Economic Factors in the Economic Retardation of the Rural Malays ", in D. Lim (ed), Readings on Malaysian Economic Development, Oxford University Press, Kuala Lumpur; Malaysian Centre for Development Studies (1976), Value Orientation of the Rural Population Towards Change in Peninsular Malaysia, Kuala Lumpur; S.H. Alatas (1977), The Myth of the Lazy Native, Frank Cass;

45. Lembaga Kemajuan Ikan Malaysia (1981), Fisheries Financial Assistance Scheme, mimeo, Kuala Lumpur.

46. Government of Malaysia (1982), Report of the Cabinet Committee on National Agricultural Policy, Vol. 2, Part 2, Government Printers, Kuala Lumpur, p. 549.

47. Government of Malaysia (1982), ibid, p. 552.

48. Government of Malaysia (1982), p. cit., p. 552 - 553

49. World Bank (1984), Sector Report on Malaysia : Incentive Policies, Vols. 1 - 3.

50. Government of Malaysia (1984), op. cit., p. 13

51. O. Mehmet (1986), Development in Malaysia: Poverty, Wealth and Trusteeship, Croom Helm.

52. Government of Malaysia (1984), op. cit, p. 13

53. Government of Malaysia (1986), Fifth Malaysia Plan, 1986-1990, National Printing Press, Kuala Lumpur, p. 316.

CHAPTER SIX

IMPACT OF SUBSIDIES IN MALAYSIAN AGRICULTURE - EVIDENCE FROM RUBBER SMALLHOLDERS - A NATIONAL PERSPECTIVE

1.0 INTRODUCTION

The rubber industry has been and still is the mainstay of the Malaysian economy. Unlike mineral resources which are non-replenishable after they are exploited, rubber is replaceable provided the old rubber trees are replanted. Therefore, the continued exploitation of the industry is dependent upon regular replanting on a 25 years cycle. In this respect, replanting subsidies have been the most important fiscal policy instituted by the government since the 1950s to encourage regular and systematic replanting. This chapter is concerned with analysing the role and effect of replanting subsidies on the smallholder sector focussing specifically on the allocative and redistributive aspects.

Objective of Chapter

This chapter is a macro analysis of replanting and relies mainly on secondary data sources. To complement this, additional analysis utilising primary data obtained from a field survey will be attempted in the next chapter.

The specific objectives of this chapter will be to analyse the following :-

a) Historical development of rubber smallholders in Malaysia

b) Necessity and justification of replanting rubber in smallholdings

c) Replanting grants - rationale, composition and financing

d) Empirical evidence of impact of replanting grants

e) Findings and conclusion

2.0 HISTORICAL DEVELOPMENT OF RUBBER SMALLHOLDERS IN MALAYSIA

Introduction

In Malaysia, the rubber industry was established in 1890 when H.N. Ridley introduced the first rubber seedlings from Brazil. [1] Initially the estate mode of production with overwhelming European interest was predominant. Rubber cultivation was a most profitable investment in 1920s because the development of the automobile industry in the United States had stimulated the demand for tyres. Realising the windfall that could be made, smallholders began to enter the industry in increasing numbers much to the envy of estate interests. In order to exclude smallholders from fully participating in the industry, the European interest persuaded the colonial government to take discriminatory action against them. [2] Hence, the smallholders had a very difficult time in the formative years of their development and had to face formidable resistance from many quarters. This situation remained unchanged until the 1950s which saw a radical shift in the colonial government position with respect to smallholders because of the imminent independence of the country. This culminated in the policy of granting replanting subsidies in order to encourage replacement of old rubber trees. [3] This policy in fact forms the bulwark of official government assistance towards the smallholder sector.

Historical Development of Smallholders in Malaysia

We have seen that although smallholders were already active in rubber cultivation in the 1920s and 1930s, it was only in the 1950s that they were officially recognised and a policy to develop the sector was formulated. Since that period, its progress had been phenomenal to the extent that it had overtaken the estate sector in its contribution to national output and total hectarage.

[4] We can distinguish three distinct phases in the progressive development of rubber smallholders in Malaysia :-

a) Initiation Stage in 1950s

b) Consolidation Stage in 1960s and 1970s

c) Expansion Stage in 1980s

The Initiation Stage

The 1950s can be considered as the first stage in the progressive development of smallholders in Malaysia. By the end of the decade, the foundation for its steady progress and development was firmly established. In the first decade of its development, the smallholders had benefited from three landmark studies commissioned by the government. [5] For example, based on the recommendations of the Enquiry Committee of 1948, the government in 1951 imposed a tax called the Schedule 2 Cess which made a levy on rubber exports. This levy formed the basis for the system of replanting grants and the Rubber Replanting Board was established to administer replanting programmes. [6] In addition, the Mudie and World Bank Missions of 1954 set the stage for the renewal of the industry by providing comprehensive evidence of the precarious state of the industry and

made various recommendations pertaining to the role of the smallholder sector. [7] Both the Missions in effect produced four main principles to government policy on rubber as follows :- [8]

a) recognition of the inadequacy of replanting cess and the need to provide additional finance

b) inducement for more extensive replanting on estates

c) special position of smallholdings and the need to induce replanting

d) financial assistance for new planting.

The Consolidation Stage

In the 1960s and 1970s, the government continued with the policies of the 1950s with rigorous replanting and new planting in estates and smallholdings and larger grants were given to the smallholders. In order to diversify the economic base of the country, cultivation of other crops like oil palm was also encouraged. In 1973, the government rationalised and restructured the Rubber Replanting Board and reconstituted a new organisation, the Rubber Industry Smallholders Development Authority (RISDA) to administer rubber replanting programmes.

The Expansion Stage

The 1980s was a watershed in the development of the rubber industry in Malaysia because the industry had to respond to new developments. A major fear was that Malaysia was losing its competitive advantage in the production of natural rubber. To overcome this, the government initiated the " Dynamic Production

Policy " which was incorporated into the Fourth Malaysia Plan (1981-84). [9] This policy was formulated to enable Malaysia to sustain its lead as the world's largest natural rubber producer. To implement this policy, various programmes were instituted with special emphasis on increasing the productivity levels of smallholders. Although the average yield of smallholders had increased from 400 kg. in 1960 to 1000 kg. per ha. in the 1980s, the smallholder sector as a whole still lagged behind the estate sector which attained yields of around 1500 kg. per hectare in 1980. [10] Three other related development in the 1980s which had a significant influence on policies affecting the smallholders were :-

a) Report of the Task Force of Experts on the Rubber Industry
b) Formulation of the National Agricultural Policy
c) Policy Paper on the Future of Rubber Smallholders in Malaysia

In 1983, the Expert Task Force [11] made a forecast on the future of the rubber industry in Malaysia up to the year 2000. It was optimistic and maintained that Malaysia could sustain itself as the leading producer of natural rubber in the world. However, the most significant part of the Report was its view that the declining role of the estate sector in sustaining national rubber production meant that the smallholder sector had to fill this vacuum and play the main lead. Table 6.1 shows the Task Force forecast for world demand for rubber and the share that Malaysia envisaged in world rubber output.

The government concurred with the recommendation of the Task Force and decided that this target should be met through accelerated replanting by smallholders. This recommendation put the smallholders

into a dilemma. However, the National Agricultural Policy had a different view of the role of rubber smallholders. The NAP was aware of the problems facing smallholders and the rubber industry in particular and foresaw that the future of the industry would be determined by world market demand as well as the relative efficiency of the country. Its strategy for the industry was therefore to raise production efficiency in existing rubber areas and to increase the value-added of rubber in agro-based industries. Therefore, areas planted under smallholders' rubber was not expected to increase very much under this policy. [12] This was in marked contrast to the Expert Task Force recommendation which envisaged a big increase in land acreage under smallholdings. The reason for this change in priority was that rubber was now less profitable due to a fall in prices and hence at that stage no expansion in production should be encouraged.

Table 6.1: Forecasted World Demand For Rubber

Year	Total Rubber	Natural Rubber	Malaysian Prod.	% of World
	.....million metric tons			
1982	11.6	3.7	1.52	41.0
1990	15.0	5.0	1.80	36.0
2000	18.0	6.0	2.00	33.3

Source : Ministry of Land & Regional Development (1985), p. 2.

Thus, there was a clear difference of opinion within governmental circles as to which direction the smallholder sector should head. There were conflicts and contradictions between the two

Reports. Therefore, the role of the smallholder sector needed to be clarified. The opportunity came in 1985 when a policy proposal was presented to the Cabinet to seek the government's clarification on the future role of rubber smallholders. [13] The paper argued that the burden on the smallholders to implement the targets set by the Task Force was too optimistic and unreasonable. Instead it recommended a few areas where the smallholder sector should focus. [14] This policy paper formed the basis upon which the government formulated its policies with respect to the smallholder sector and RISDA and other related agencies like FELCRA are currently implementing most of its recommendations. It can be seen that from the above account it is quite certain that the government will continue to support the smallholder sector both for economic and political reasons in the foreseeable future.

Summary

We have discussed the important role of the unorganised smallholder sector in the rubber economy. This sector played a predominant role since the 1960s when it overtook the estate sector in terms of contribution to total production and hectarage. Hence, the future of the rubber industry in Malaysia will depend mainly on the performance of the smallholders. However, although the relative contribution of the estate sector has declined, it will continue to play an important role. Estates have instead concentrated their resources on oil palm. The main reason for the shift in emphasis by estates from rubber to oil palm was consideration of profit. [15] However, estates are not expected

to completely abandon rubber production because among other reasons some land is unsuitable for conversion. However, despite facing falling prices and accelerated increases in costs and hence reduced profitability for them, smallholders are not in a position to follow in the footsteps of the estates. This is mainly due to resource constraints. For example, although smallholders who cultivated other crops are also eligible to get replanting assistance, this is given only once. Further requests for replanting would only be approved for rubber. [16] This is an indirect way of discouraging smallholders from switching to other crops. Since estates are profit-making enterprises, they have to seek alternative investment opportunities to serve the interest of their shareholders once returns from rubber are less attractive. Smallholders do not have this choice because for most of them, rubber cultivation is the only means of livelihood known to them. However, the most important obstacle is the lack of resources and know-how to effect this transition. For example, about 70 % of smallholders preferred to replant rubber to other crops. [17] However, although positive discrimination towards the smallholders has its benefits, the wisdom of the policy of discouraging smallholders to switch crops is questionable since this would tend to retain the more enthusiastic producers in a declining industry. In addition, substantial subsidies have to be offered to maintain production. The only way therefore of sustaining the future viability of the industry and justifying the widespread use of subsidies would be to depend on the innovativeness and competitiveness of the smallholder sector.

3.0 FEATURES OF RUBBER SMALLHOLDERS IN MALAYSIA

Introduction

In this section we will give some relevant data on rubber smallholders in Malaysia. The most comprehensive information on rubber smallholders in Peninsular Malaysia is contained in the 1977 Rubber Smallholders Census conducted by RISDA. About 338,137 smallholders or about 68.9 % of known rubber smallholders population were interviewed on questions related to their income, holding size, age, productivity and other socio-economic variables. [18] Although the Census was conducted in 1977, it was only published in 1983. Despite being dated, this Census is still useful for planners, policy makers and researchers in Malaysia because the results form an important source of data-base for the largest single group of primary producers as well as the largest single poverty group in the country. [19]

Characteristics of Smallholders in Malaysia

First, the basic features of rubber smallholders in Malaysia will be outlined. Relevant statistics on this are extracted from the 1977 Census and produced in the Statistical Appendix.

Appendix Table 1 shows there were 490,460 rubber smallholders out of whom more than 4.0 % were organised smallholders in various land development schemes while the rest were unorganised. It is this latter group that concerns us in this study. Appendix Table 2 shows that between 1961-77, the number of smallholders increased by 206,000 or about 50 % within 16 years. Appendix Table 3 shows that 74.6 % of smallholders were Bumiputras or native-born Malays or

literally meaning " sons of the soil " and a significant minority were of Chinese and Indian origin. Appendix Table 4 shows that while Bumiputras were larger in numbers, they only owned about 63.0 % of rubber land while the Chinese who constituted less than one quarter of the population owned about 35.0 % of land. About 70 % of smallholders were males who owned three-quarters of the land. Appendix Table 5 shows that the average age of smallholders was about 48.0 years while about 21 % were above 60 years. This ageing phenomenon among smallholders is a serious problem in Malaysia because it will worsen the problem of labour supply. In addition, there will be an increase in the amount of land left idle by owners. Most youths prefer to migrate to the urban centres and not remain behind as rubber tappers. Appendix Table 6 shows that about 74 % of smallholders were owner-operators while 24 % rented out their holdings. The latter category was more common among Chinese smallholders. Another feature of smallholders is that 39 % depended on rubber and other agriculture for their livelihood while 31 % had also to rely on off-farm job opportunities to supplement their income. As to holding sizes, on average they were very small at less than 2 hectares per household. Appendix Tables 7, 8 and 9 give data on replanting. Appendix Table 7 shows that out of 490,000 smallholders, 259,000 smallholders (52 %) had participated in government replanting programmes. A majority of 89 % had replanted only once. Of the remaining 232,000 smallholders who did not replant, 107,000 smallholders did not do so despite having old trees. About 125,000 smallholders did not participate in RISDA's programme because of three reasons :-

a) those who had financed replanting on their own

b) those who had newly planted rubber on their land

c) FELDA and FELCRA settlers whose trees were still young

Of the 366,000 smallholders who were eligible for replanting assistance, 29 % were yet to participate. Over 80 % of non-participants were Bumiputras and about half of them had holdings of less than 2 ha. Appendix Table 8 shows that substantial replanting occurred after 1960 while there were no big increases after 1970s. Appendix Table 9 shows that the majority of non-replanters had holdings below 4 ha.

Major Problems Areas Facing the Smallholders

Many studies have clearly identified that the smallholders face considerable constraints. [20] According to RISDA, [21] the majority of non-replanters were males (70 %). About 83 % were sole owners of land. This conflicts with Barlow's findings that multiple ownership is an obstacle to replanting. About 61 % of non-replanters were over 45 years old. But the most significant fact is that most of them had land holdings of less than 4 ha. Why is non-participation rate in RISDA's replanting programme so high, especially among the Bumiputra (84 %) ? According to RISDA, there were three categories of problems which prevented replanting among smallholders. [22] Firstly, there were smallholders who were unaware or not convinced of the benefits of replanting. This shows that the extension efforts of RISDA failed and was not effective in conveying the message to smalholders. Secondly, there were smallholders who were aware of the benefits of replanting but

wanted to give up rubber cultivation either by selling their land or converting it to other crops. Thirdly, there were smallholders who wanted to replant but were unable to do so because of the lack of information, capability and know-how. Some observers believed that although cultural and social forces played a part in explaining high non-participation rates of replanting among the Malays, the small and uneconomic size of land is the most important factor in determining profitability and viability of replanting. [23]

Summary

We have seen that the problems faced by smallholders are indeed formidable and one begins to understand why after nearly 40 years of concerted effort, rubber smallholders are still the poorest category of workers in the country. [24] The problems facing smallholders are in fact more deep-rooted. They are structural and institutional in nature whereas the solutions prescribed by the government have only touched the surface and not the root cause of the problem. [25] The government is, however, aware of this but is reluctant to institute major agrarian reforms in the country which would attack vested interests. Hence, in designing a general developmental strategy to solve the problems of poverty, classical intervention measures revolving around pricing polices such as through the provision of credits and subsidies are the most commonly adopted because they are the least controversial. [26] It is an assessment of these fiscal policy measures that we shall attempt in this and the next chapter.

4.0 RUBBER REPLANTING IN SMALLHOLDINGS [27]

The Replanting Process

Rubber trees have an economic life span of 30-35 years after which productivity will decline rapidly and eventually reach zero. Therefore, to maintain the industry on a sustained yield basis, the capital stock of trees must be renewed through replanting of approximately 3 per cent of total area under rubber each year. [28] Hence, replanting is the life-line of the industry in Malaysia and has been responsible for increasing yields and reducing greatly the cost of production on estates and smallholdings. Normally replanting takes place when the trees are over 25 years old but could occur earlier depending on the state of the trees and their output. The process of replanting involves cutting down the old trees and new high yielding clones are then planted.

After replanting work is completed, it takes about 6 to 7 years before the trees mature and produce latex which is produced through tapping. But the long gestation period before trees mature is the main reason hindering many smallholders from replanting because most smallholders are unable to forego their present rubber income. This is especially true for smallholders with holdings of less than 5.0 hectares. However for those who manage to replant, their trees, once they mature will be productive for the next 30 years before undergoing a second cycle of replanting. Normally, if trees are replanted with high yielding clones and properly maintained, yields will be relatively high.

Assistance is normally available to smallholders at all stages of replanting. Most is in the form of subsidies, credits or outright

grants which are usually available on application. Basically, there are two methods of replanting which the smallholder can choose. The first which is replanting on an individual basis is the traditional form and the most popular. Under this method, it is common for smallholders to use family labour to save cost and contract out the more difficult jobs. However, a major drawback of this method is that its success depends entirely upon the personal efforts of the smallholder and his family who are under great constraints with respect to finance, material and expertise. Under these circumstances, the existence of RISDA should be encouraging but unfortunately, it is in the area of extension where RISDA is weakest. For example, the replanting phase is the stage where there is least supervision by RISDA. The only contact between RISDA and smallholders at this stage is the annual inspection of trees to determine whether holdings were properly maintained and whether grants were properly utilised. Decisions are then made whether instalment payments from the replanting grant could be approved for subsequent payment. Any technical or personal problems faced by smallholders at this stage are not given due consideration by RISDA mainly due to shortages of staff. Unless the management of RISDA can sort out this problem, it would be very difficult for smallholders to overcome their problems and realise their full potential without the full support of RISDA.

Partly as a reaction to this problem, in 1979 RISDA resorted to the second method which is the collective approach to replanting where it has been vigorously propagating the mini-estate concept. [29] Under this approach, in addition to overcoming personnel

constraints and easier management of replanting work, smallholders could be easily controlled. However, although collective replanting is favoured by RISDA it is still not popular with the majority of smallholders mainly to legal, administrative and attitudinal constraints. However, the emphasis by RISDA on the collective approach to replanting does not imply the abandonment of the traditional methods of replanting. For the present time at least it is anticipated that the area replanted on an individual basis will continue to be larger on an annual basis than mini-estates. For example, currently, about 20,000 hectares of individual holdings are being replanted compared to 5,000 hectares per year for mini-estates.

The Use of High Yielding Varieties in Replanting

Introduction

The Mudie and IBRD Reports have argued and justified persuasively the necessity for Malaysia to replant her stock of old rubber trees. It was feared that if the rate of replanting was inadequate or below the 3 % optimum level, then the country could not maintain its present levels of production.

In this section, we will analyse why there is a need for smallholders to replant. We shall illustrate the necessity of replanting in smallholdings under two different conditions; firstly, by comparing yield of old rubber trees with those of new rubber stand of high yielding variety, secondly, by comparing yield of estates with those of smallholdings and the income differentials.

TABLE 6.2: Comp. of Yield of Old and Replanted Rubber Stand, 1980.

Old Rubber Stand (Kg./ha) [1]			Repl. Trees (RRIM 600) at Diff. % of Trial Yields (kg. / ha)					
			60 %		80 %		100 %	
Year	Ann.	Cum.	Ann.	Cum.	Ann.	Cum.	Ann.	Cum.
1	564	564	-	-	-	-	-	-
2	564	1128	-	-	-	-	-	-
3	564	1692	-	-	-	-	-	-
4	564	2256	-	-	-	-	-	-
5	564	2820	-	-	-	-	-	-
6	564	3384	432	432	576	576	720	720
7	564	3948	726	1158	968	1544	1210	1930
8	564	4512	960	2118	1280	2824	1600	3530
9	564	5076	1116	3234	1488	4312	1860	5390
10	564	5640	1386	4620	1848	6160	2310	7700
11	564	6204	1392	6012	1856	8016	2320	10020
12	564	6768	1410	7422	1880	9896	2350	12370
13	564	7332	1482	8904	1976	11872	2470	14840
14	564	7896	1620	10524	2160	14032	2700	17540
15	564	8460	1416	11940	1888	15920	2360	19900
16	564	9024	1314	13254	1752	17672	2190	22090
17	564	9588	1224	14478	1632	19304	2040	24130
18	564	10152	1596	16074	2128	21432	2660	26790
19	564	10716	1764	17838	2352	23784	2940	29730
20	564	11280	1956	19794	2608	26392	3260	32990

Note: Ann. = Annual; Cum. = Cumulative; [1] = low yield rubber yield = 564 kg/ha. 1980. Source: A. Arope, et.al. (1983), p. 206.

Comparision of Yield of Old Stand Versus New Stand

In order to show that yield levels are different between old unselected seedlings associated with trees planted in the 1950s with trees replanted with high yielding clones, we produce Table 6.2. which shows how replanting enhances the level of productivity.

To arrive at the above estimates, certain assumptions regarding output figures of existing old trees and field trial figures derived from RRIM 600 series clones were made. It is estimated that yields of unimproved rubber varieties of a typical low yielding small-holding would produce about 564 kg. per ha. per year of dry rubber while a bud-grafted clone (e.g. RRIM 600 series) may produce 2000-2223 kg. per ha. But these latter figures from RRIM field trials are not replicable on smallholdings because of the poor standard of field maintainance and low level of fertiliser application. In addition, although the yield potential of RRIM 600 is substantial, maximum yields are not attainable until the fifth year of tapping. The typical yield profile of RRIM 600 series is given in Table 6.3. [30]

Although by undertaking replanting, production is lost for 6 years the yield from the new clone is markedly higher than from the old unselected seedlings of the unreplanted holding. In the calculations presented in Table 6.2, we assumed the following :-

a) that the existing stand of rubber produced about 564 kg. per ha.

b) that one hectare of the unimproved rubber variety gave a constant average yield of 564 kg. per ha. compared to some possible yields from RRIM 600 based on 100 %, 80 % and 60 % of RRIM's field trial results.

TABLE 6.3: RRIM 600 Series (Class 1 Clone) Mean Yield Profile

Years of Tapping	Mean Yield (kg./ha.)
1	720
2	1,210
3	1,600
4	1,860
5	2,310
6	2,320
7	2,350
8	2,470
9	2,700
10	2,360
11	2,190
12	2,040
13	2,660
14	2,940
15	3,260

Source: Ani Arope, et. al. (1983), Chapter 6 , Tables 61 & 63

For example, at 60 % yield level, the cumulative yields of replanted stand exceeded yields of old trees after year 12, at 80 % after year 10 and at 100 % after year 9. The figures underlined in Table 6.2 indicate that yields of the new stand are more superior to yields of the old stand by a great margin. From this it is clear that in order to reap benefits of higher productivity, smallholders must replant their trees with high yielding varieties. For example, even at 60 % of optimum potential output, the cumulative yield of

RRIM 600 after year 12 would be profitable and this would continue for another 16 years. Therefore, it can be concluded that old trees need to be replaced by better clones in order to increase yield and hence profitability for the smallholders.

Comparision of Estate Yield With Smallholder Yield

The second method to justify the necessity for replanting by smallholders is by comparing the yields of estate with those of smallholdings and computing the monetary returns lost or foregone by smallholders for not replanting. The reason for comparing smallholdings with estates is that estates are models for the smallholders in terms of managerial and organisational efficiency. In addition, almost all estates have replanted with high yielding clones. Hence, the yields attained by estates are more superior to smallholdings. According to Bailey [31] productivity on estates is superior when compared to smallholdings for two reasons. First, estates are in a better position to take advantage of research results by RRIM and secondly, due to the large size of holdings and capital resources available to it, estates are able to replace older and less productive trees by staggering their replanting schedule. Table 6.4 compares the yield of estates and smallholdings from 1947 to 1986 and estimates were made of income foregone by smallholders by not attaining the estate level of production at various price levels.

Table 6.4 shows that estates were more productive than smallholders. The smallholders only managed to attain yield levels of between 58 % and 89 % of estate production levels between 1947

and 1986. Although organisational factors played a crucial part in determining yields, it is very clear that replanting with high yielding materials was the main contribution to the high rise in yields. Based on this premise and using three price differentials of 80 cents, 100 cents and 200 cents per kg. the additional income foregone by smallholders on a per hectare basis was very great. In fact, this situation has entailed great losses of income from the national perspective. Arope, et. al. [32] observed that total production is not the key variable in the assessment for the need of technology transfer but rather it is the yield per hectare variable which is crucial. Arope estimated that in 1973 there were 900,000 ha. of smallholdings being tapped and with a price level of 100 cents per kg. estimated that about M$5.8 million was lost within the smallholding sector. [33] In addition, even if smallholders were able to achieve only one-half of the estate yield, the income foregone would have still been high. Hence, there is no question about need for smallholders replanting with high yielding rubber so as to achieve a higher yield on a per hectare basis. It is therefore imperative that more smallholders should be urged to replant in order to benefit them personally and the nation from enhanced yield.

Summary

From the above analysis, it is clear that in order for smallholders to increase their productivity and achieve output levels near that of the estates, it is necessary for them to replant their old trees with high yielding clones.

TABLE 6.4: Production and Yield in the Estate and Smallholding Sector and Income Differences Between the Sectors (kg/ha)

Year	Est.	S/H	%	Additional Income(M$) at Diff.	80 c/kg.	100 c/kg.	200 c/kg.
1947	638	488	76.5	150	120	150	300
1948	632	477	75.5	155	124	155	310
1949	613	438	71.5	175	140	175	350
1950	573	512	89.4	61	49	61	122
1951	516	446	86.4	70	56	70	140
1952	543	387	71.3	156	125	156	312
1953	530	380	71.7	150	120	150	300
1954	539	393	72.9	146	117	146	292
1955	551	471	85.5	80	64	80	160
1956	557	427	76.7	130	104	130	260
1957	601	428	71.2	173	138	173	346
1958	658	433	65.8	225	180	225	450
1959	719	445	61.9	274	219	274	548
1960	758	477	62.9	281	225	281	562
1961	808	504	62.4	304	243	304	608
1962	837	485	57.9	352	282	352	704
1963	876	518	59.1	358	286	358	716
1964	917	550	60.0	367	294	367	734
1965	953	577	60.5	376	301	376	752
1966	1006	608	60.4	398	318	398	796
1967	1032	599	58.0	433	346	433	866
1968	1105	666	60.3	439	351	439	878
1969	1152	763	66.2	389	311	389	778
1970	1190	718	60.3	472	378	472	944
1971	1288	711	55.2	577	462	577	1154
1972	1323	680	51.4	643	514	643	1286
1973	1378	901	65.4	477	382	477	954
1974	1380	1039	75.3	341	273	341	682
1975	1385	1068	77.1	317	254	317	508
1976	1400	1093	78.1	307	246	307	614
1977	1430	1102	77.1	328	262	328	525
1978	1448	1104	76.2	344	275	344	550
1979	1449	1105	76.3	344	275	344	550
1980	1428	1104	77.3	324	259	324	518
1981	1450	1104	76.1	346	277	346	554
1982	1507	955	63.4	552	442	552	1104
1983	1423	948	66.6	475	380	475	950
1984	1373	978	71.2	395	316	395	790
1985	1397	1009	72.2	388	310	388	776
1986	1420	1037	73.0	383	306	383	766

Source: Statistical Appendix Table 14.

5.0 REPLANTING SUBSIDIES - RATIONALE, COMPOSITION AND FINANCING

Introduction

The Replanting Grant is the major form of governmental aid to rubber smallholders. These subsidies have been responsible for accelerating the rate of replanting in estates and smallholdings in Malaysia. The World Bank views replanting grants as the single most important governmental assistance scheme for the smallholder sector which had enabled it to upgrade its technological status. [34] Barlow observed that in the case of individual smallholders, the replanting grant may be seen as the only practicable means of financing replanting of old trees with high yielding materials in the absence of a functional long term capital market. [35] This is because most financial institutions are reluctant to lend to high risk but poor smallholders, rather they prefer to lend to big enterprises such as estates because of the low risk involved. Without the subsidy, it is difficult if not impossible for smallholders to bear the high and risky cost of replanting.

Replanting grants are given in cash and kind. As for material assistance, seedlings and fertilisers are compulsory while other items are optional. The balance of the grant after deducting for these materials is then paid in cash to the smallholders. In general, cash balance to smallholders vary between 58 - 81 % of the grant while the rest is taken up by expenses on materials. [36] Grants are usually paid out in seven instalments. The rationale for this is to ensure that grants are not misused. However, there is still the problem of fungibility of funds where subsidies

(especially the cash balances) are not used solely for replanting but on consumption expenditures. Rates payable under the grant have been revised 7 times since 1952. The current rate is M$5434 per ha. for holdings less than 4 ha. and M$3705 per ha. for holdings more than 4 ha. for rubber. The rate for other crops is M$3707 and M$2965 respectively. The grant system is so structured in order to assist tappers who have small land holdings to encourage rubber cultivation instead of other alternative crops. This subsidy scheme is financed partly through a tax on exported rubber and from direct government funds. In addition, for each hectare of rubber replanted, RISDA received M$741 direct from the Treasury as a reimbursement. [37]

There are no restrictions on the size of holdings that can be replanted by smallholders at any one time. However, only those smallholders who own less than 6 ha. qualify for replanting grants of the entire area if it is replanted under a single programme. A smallholder who owns more than 6 ha. will be eligible for a maximum replanting grant of two-thirds of his land or 6 ha. whichever is smaller. The rest of the area will only qualify for the grant after a lapse of three years. Through this RISDA ensures that priority is given towards assisting the smallest group of tappers. Table 6.5 shows the current rate of subsidy while Table 6.6 shows the rates which were effective from 1952 till 1981. From Table 6.6 it can be seen that the amount of replanting grants have been revised upwards no less than seven times within 29 years. In 1952 the rate of subsidy was only M$400 per acre while in 1981 it increased five-fold to M$2200 per acre.

TABLE 6.5: Payment of Replant.Grants to Land Size and Crop - 1980

Grant Instalment	Rubber		Other Crops	
	< 4 ha	> 4 ha.	< 4 ha.	> 4 ha.
	..... M$ per ha			
1st instalment	1582	1236	1483	1236
2nd instalment	889	494	1112	864
3rd instalment	618	494	741	618
4th instalment	618	494	371	247
5th instalment	618	371	-	-
6th instalment	618	371	-	-
7th instalment	494	247	-	-
Total	5437	3707	3707	2965

Source: RISDA

TABLE 6.6: Rubber Replanting Grant Schemes and Rates, 1952 - 1981

Scheme No	Duration	Grant (M$ per acre)
1	1/1/52 - 31/12/52	400
2	1/1/53 - 31/12/59	500 (from Nov. 1954)
3	1/1/60 - 31/12/66	600 (from Jan. 1960)
	(from Jan 1962)	750 + 50 bonus
4	1/1/67 - 31/12/70	750 + 50 bonus
5	1/1/71 - 31/12/75	900
5A	1/1/76 - 31/12/80	900 & 1200 from Jan. 1978
6	1/1/81 - present	2200

Source: RISDA and Economic Reports, various issues

From the smallholder's point of view, replanting grants should cover the full cost of replanting. But this is not so. Since most smallholders are poor and earning income levels below the poverty line, the excess cost of replanting is likely to cause some difficulties for them since they have very little savings. In this connection, two issues are relevant. First, the extent of the finance gap ? Secondly, to what extent has this gap hindered smallholders participation in replanting programmes? To answer these questions, it is necessary to analyse replanting cost figures.

TABLE 6.7: Estimated Replanting Costs of Rubber S/H in 1960s(M$/ha)

Year of Replanting	Lab. Required man-days	Wages M$	Other Cost	Total Cost	Replanting Grant
1st	295	590	310	900	741
2nd	205	410	100	510	272
3rd	105	210	50	260	259
4th	45	90	50	140	210
5th	35	70	45	115	-
6th	25	50	45	95	-
Total	710	1420	600	2020	1482

Source: A. Halim (1970), pp. 215

Note: - Wages for family imputed at M$2.00 per man-day
- Total costs include exp. M$200 for fencing in first year
- Weed growth need extra labour of 150 man-days in second year and 50 man-days in third year

TABLE 6.8: Replanting Cost at Current Rates - 1981

A) For Individual Smallholder

Replanting Cost ..... M$6,420 per ha.

Replanting Grant ..... M$5,434 per ha.

Excess Cost ..... M$1,014 per ha.

B) Mini-Estates (Rubber)

	< 4 ha.	> 4 ha.
Estimated Cost	M$6,511	M$6,511
Subsidy (grant)	M$5,436	M$3,707
Excess Cost	M$1,076	M$2,804

Source: Robert B. Campbell et. al. (1985), p. 68

Tables 6.7 and 6.8 show the cost of replanting and amount of replanting grant given in 1960s and 1980s. From Table 6.7, it is estimated that the excess cost of replanting over replanting grants in smallholdings was about 36 % in 1960s while in 1980s it dropped to 19 % both for individual smallholders and mini-estates. Here it is important to note that it is not the policy of the government to subsidise the full cost of replanting. However, it is significant that rate increases have been quite dramatic and this has alleviated to some extent the problem of financing replanting by smallholders. The existence of this problem has not apparently affected smallholders achievement of replanting. The statistics on replanting in Statistical Appendix shows that smallholders do undertake capital replacement through replanting. As to the argument that the " hard-cores " do not replant because of financial problem, a study by RISDA found that this is not so. [38] Instead these tappers faced

an entirely different set of problems.

Among smallholders, family labour constitutes the main source of labour supply in replanting work although hired labour handle the more difficult jobs. This is due to the labour-intensive nature of rubber cultivation which involves a great amount of manual work like weeding, fertilising, planting, etc. Hence, in the early stages of replanting, the bulk of replanting costs tends to go to wages. In fact labour costs contributed about two-thirds of total cost in 1960s. [39] Also the cost of replanting have been consistently high relative to the amount of grants available to the smallholders even in the 1960s till the present time.

Basis Used in Fixing Replanting Grant

As we have seen, the amount of subsidy under replanting grants have been revised seven times since 1952. The latest increase was in 1981. Information obtained from the RISDA revealed that the principle used to determine the amount of replanting subsidy was based on two-thirds of a liberally estimated cost of replanting on estates while smallholders are expected to make up the balance. RISDA said that new rates must consider the development cost of FELDA and private estates. [40] Table 6.9 gives replanting costs for commercial estates which varied between M$1836 and M$2231 per acre. Note that prior to the latest subsidy increase in 1981, RISDA had suggested to the government a figure of M$1600 while the World Bank had suggested M$1800 per acre. However, the government approved M$2200 per acre payable according to Table 6.10 probably after yielding to strong pressures from the smallholders.

TABLE 6.9: Rubber Replanting Costs For Comm. Estates (1980 Prices)

(various alternatives at M$ per acre)

	OPTIONS				
	1	2	3	4	5
Preplanting Year	350	390	600	435	350
Year of Planting	450	615	500	480	450
2nd Year	310	285	267	257	300
3rd Year	240	230	267	223	250
4th Year	200	190	215	208	200
5th Year	200	155	186	233	200
6th Year	200	135	146	-	150
Total	1950	2000	2231	1836	1906

Source : RISDA (1987), Personal Communication, 17 April 1987.

TABLE 6.10: Rates of Replanting Grant for Rubber - 1960 - 80

Instalment	Comparable Rates In (M$/acre)			
	1981	1978	1974	1960
1st	640	440	250	296
2nd	360	180	100	109
3rd	250	180	100	104
4th	250	150	70	84
5th	250	130	70	-
6th	250	120	60	-
7th	200	-	-	-
Total	2200	1200	750	593

Source: RISDA

Table 6.10 also compares the replanting rates approved in 1960, 1974, 1978 and 1981. It is clear that the latest rate of increase in 1981 was the highest in the history of rubber replanting in Malaysia. A probable reason for the substantial increase in replanting grant was the government's conviction that increases in replanting grants would be an incentive for smallholders to accelerate replanting. This is also related to the government's effort of enhancing national production of rubber as envisaged in the " Dynamic Production Policy " discussed earlier. We shall discuss later whether there is any correlation between the rate of replanting and increases in replanting grants.

Summary

From the analysis above, it is clear that the amount of replanting grant was inadequate to cover fully the cost of replanting by between 10 % to 20 % in 1981. In the 1960s, since replanting grants were only one-half of the present rate, the cost exceeded subsidies by a greater percentage. However, this factor was not decisive in preventing most smallholders from replanting as data from RISDA revealed. Considering that the amount of subsidy received by smallholders was relatively small, their achievements in replanting is commendable. This leads us to conclude that it is not necessary for the government to pursue a policy of full subsidisation to achieve its objective provided farmers are able to perceive material benefits from their efforts.

To pursue this objective, farmers are willing to work harder and extract additional resources to supplement governmental subsidies. Therefore, it is important to realise that farmers must make their own contribution in terms of material and non-material resources in order for their efforts to be successful.

Sources of Funds For Subsidies - Export Duty And Cesses

Replanting grants are financed partly from export tax on rubber and partly from government funds. RISDA in fact owes its existence to these sources. Since RISDA is responsible for administering replanting programmes exclusively for smallholders, it is important for us to study its budget. Table 6.11 shows the sources of RISDA's income while Table 6.12 indicates RISDA's expenditure.

TABLE 6.11: Main Income Sources of RISDA (1970-86) (M$ million)

Item	70	71	72	73	74	75	76	77	79	80	81	82	83	84	85	86
Cess	124	129	128	107	144	135	149	151	200	172	189	186	193	201	198	204
Asst	9	17	21	37	18	21	26	19	NA	NA	67	47	38	28	40	29
Loan	-	-	-	-	-	-	-	-	-	-	-	42	39	59	61	64
Profit	3	5	6	8	11	12	13	14	NA	NA	NA	NA	NA	NA	NA	NA
Tot	136	148	155	152	173	168	188	184	200	172	256	275	270	288	299	297
Cess(%)	91	87	83	70	83	80	79	82	100	100	74	68	71	70	66	69

Note: Asst. = Govt. Assistance; Loan = Govt. Loan; NA =Not Available

Source: RISDA (1982), Table 2

RISDA (1987), Personal Communication, 17 April.

World Bank (1984), Vol. 1, Table 2, p. 36.

Table 6.11 shows that the main sources of income for RISDA include cess, government assistance, loans and profits from its portfolio investment. Cess collection constitutes the bulk of its income. In the 1970s when rubber prices were high, this constituted about 80 - 90 % of total income. However, in 1980s, the contribution of cess to total income has dropped to about 70 %. However, in absolute terms its contribution is still significant. For example, in 1970 cess collection was only M$124 million but in 1986 this had increased to M$204 million (in current prices). Since the cost of replanting has increased, in order to achieve the high targets of replanting smallholder acreage, from 1982 it was necessary to supplement the income of RISDA with government assistance and loans. For example, in 1980, 86 % of the replanting grant of M$5434 per hectare was provided by cess while the other proportion was provided by direct government grant. [41] On the other hand, government assistance constituted only about 13 % of total income in 1977 and 1986 which was M$19 million and M$29 million respectively. The fall in revenue from falling rubber exports and low prices might have contributed to a fall in cess collection. [42]

From Table 6.12 we can see that the administrative expenditures of RISDA rose to more than double from 1975 to 1986, i.e. from M$41 million to M$84 million. As for the development budget, in 1975 it was only M$192 million while in 1986 it increased to M$278 million, an increase of 45 %. (in current prices).

TABLE 6.12: RISDA's Annual Budget, 1975-86, (M$ million)

Item	75	76	77	78	79	80	81	82	83	84	85	86
Adm. Exp.	41	35	33	65	51	59	84	99	77	80	84	84
Est. Dev.	51	44	67	71	56	80	NA	NA	NA	NA	NA	NA
S/H Dev.	138	127	110	123	101	137	NA	NA	NA	NA	NA	NA
Marketing	4	4	11	7	2	5	NA	NA	NA	NA	NA	NA
Dev Cost	192	175	187	200	159	222	67	326	296	288	300	278
AD Cost	234	220	265	221	280	150	424	373	369	384	363	362
Cess Ref	60	60	60	67	67	69	NA	NA	NA	NA	NA	NA

Note: - Est. Dev. = RISDA mini-estate development

- S/H Dev. = include replanting, infrastructure, group processing centres, etc.
- Marketing = Smallholder Marketing Scheme
- Cess Refund = Estate Cess Refunds
- Dev. Cost = Est. Dev. + S/H Dev. + Marketing.
- AD Cost = Adm. + Dev. Costs

Source: Adapted from Statistical Appendix Chapter 6, Tables 11 & 12.

Having examined RISDA's budget figures, the next important issue to discuss is how much subsidy is RISDA actually spending on rubber replanting activities ? This is a valid question to ask because RISDA has diversified its activities very greatly in the past few years. [43] To what extent has this diversification siphoned away funds from rubber replanting ? The answer can be found if we scrutinise RISDA's actual expenditure. However, RISDA's expenditure figures from original sources were not explicit as regards subsidies. We therefore have to estimate the actual amount

of subsidy spent by RISDA on replanting. This is to distinguish between non-subsidy expenditures. In Table 6.13, we present a computation of the annual expenditure of RISDA from 1968 - 1986 based on various sources in RISDA. Item 2 of Statistical Appendix Table 12 lumps all expenditure related to replanting grants, input subsidies and other smallholder development projects like infrastructure development, group processing centres, etc. However, it can be deduced that item 2 constitutes the bulk of the subsidy towards individual rubber replanting. Hence, this would exclude mini-estate development expenditures. Taking the criteria of the World Bank [44] that 50 per cent of the administrative expenditures of RISDA can be considered as replanting expenditures, we then add this figure to item 2 above. The result is Table 6.13 which is an estimate of the total replanting expenditures of RISDA.

From Table 6.13, it can be seen that prior to 1974, replanting subsidy took up over 90 % of RISDA's total expenditures. This figure has dropped greatly in the 1980s. For example, in 1986 it was only 46 %. This trend reinforces our observation that RISDA is now concentrating on other activities besides rubber replanting to improve the standard of living of smallholders.

Cess and Export Duty

There are at least 5 sources of funds for RISDA's operations two of which are the export duty and cesses. In effect there are three types of taxes imposed upon rubber as follows :-

a) export tax - at rate of 22.125 cents per kilogramme

b) replanting cess - at rate of 4.5 cents per pound

c) research cess - at rate of 3.85 cents per kilogramme

TABLE 6.13: Total Subsidy for Rubber Replanting, 1968-86, M$million

Year	Amount(M$M)	% of Tot. AD Cost
1968	137	98
1969	111	97
1970	107	97
1971	107	97
1972	110	96
1973	119	95
1974	168	95
1975	158	81
1976	144	80
1977	127	75
1978	155	59
1979	127	60
1980	165	59
1981	108	72
1982	97	29
1983	77	50
1984	69	42
1985	82	44
1986	72	46

Note: AD = Admin. & Development Cost

This tax is collected and spent by different agencies without any interference by the Treasury. However, it is believed that the

burden of tax compared to the income of smallholders and estates is regressive. [45] In fact, tax discrimination was greater for the smallholders than the estates because firstly, estates benefited more from research results than smallholders. [46] Secondly, estates were able to recoup all their replanting expenditures in one lump sum payment on producing proof of replanting whereas smallholders only obtained advances of partial replanting expenditure in instalments over 7 years and the amount of subsidy receive will depend on the size of holding and type of crop replanted.

The various cesses which are imposed on exports of rubber are additions to the export duty. Based on the rates above, rubber replanting cess was imposed at M$99.20 per metric ton and research cess at M$38.50 per metric ton. All of these taxes were payable regardless of price until 1984. In this regard, the World Bank said that there were two problems with the rubber cess. Firstly, whether the net effect of replanting cess compared to the replanting grant ultimately represented a tax or a subsidy to the smallholders. Estimates made by the Bank suggested that the replanting grant represented a net tax, especially on the more productive rubber cultivators. [47] This meant that smallholders paid out more in cess payments than what they got in return from the replanting grant. Secondly, the accumulated funds constituted a large budgetary pool in one organisation, that is RISDA. The Bank believed that RISDA was badly managed and that it was inefficient, concerned with empire-building and hence has diverted RISDA from its prime mandate which is to offer technical and financial support to rubber smallholders, especially in rubber replanting. [48] Although some of

the observations of the World Bank are true, it has to be born in mind that RISDA's operations are not solely motivated by economic considerations and hence could not be judged solely on economic criteria. In tackling major social issues facing the smallholders, RISDA has to make many non-economic decisions and take other measures which is in line with the government's objective of eradicating poverty. For example, there are cases of smallholders without land title who have received replanting subsidies. Hence, RISDA has diversified its activities away from rubber replanting because it believes concentrating on rubber alone was inadequate to get smallholders out of poverty. [49] This stand is also in line with our earlier observation that if the government wanted to sustain rubber production in Malaysia, then rubber production will have to be highly subsidised.

Export Duty

On the issue of export duty, many people consider it as an extra burden on the smallholders. This situation, however, had been rectified by the government in enforcing the so-called threshold price at which rubber would be taxed. This occured in 1984 when the export duty was rationalised by the government and the threshold price is now M$1.80 / kg. By keeping the threshold price high, the government was effectively reducing the duty burden on rubber producers. According to a study commissioned by the Malaysian Government, at present market and threshold prices, the rubber export duty did not seem to represent a serious burden to the smallholders. The duty of M$0.02125 / kg. is the equivalent of about

1.5 % of current farm-gate price. (See Table 6.14 below). Under current conditions, the removal of export duty on rubber would not lead to any significant increases in production nor would there be much effect on poverty redressal. [50]

TABLE 6.14: Derivation of 1983 Financial Farm Gate Price of Rubber

Item	Price / kg
MRELB Price, RSS 1 f.o.b.	M$2.46 (May 25,1983)
Less export duty	0.32
Research cess	0.04
Replanting cess [1]	0.10
Transport & govt. charges	0.02
MRELB charges	0.02
Ex Factory Price	1.92
Less Processing	0.25
Less Transport, field to factory	0.04
Ex Farm Gate	1.63

Note [1]- Estates are refunded replanting cess- hence its ex-factory price is M$2.02

Source: World Bank (1984), Table 5.13, p. 87

Summary

We have seen that replanting grants are mainly financed from cess income and export duty. Although cess was the major contributor to replanting grants in the 1960s, its contribution had declined due mainly to the fall in rubber prices. Hence, RISDA had to rely on direct government funding and on external loans to finance replanting and other activities.

6.0 REGRESSION ANALYSIS OF IMPACT OF REPLANTING GRANTS

From our analysis so far we have found that replanting is indeed crucial to the rubber economy of Malaysia. It is necessary now to find out the following:-

(a) whether there is a correlation between the increase in replanting grants and rate of replanting.

(b) whether replanting with high yielding clones has led to an increase in the productivity and yield levels of smallholders.

(c) whether income of smallholders have increased as a result of replanting.

However, due to limitations of time series data, we are only able to undertake regression analysis for the following :-

i) hectarage response

ii) yield response

iii) total production response

In the next chapter, we will be able to do more extensive regression by using survey data of rubber smallholders.

Hectare Response

First, we will investigate whether there is any correlation between rates of replanting and increases in replanting grants. Table 6.15 shows replanting grants and replanted hectares from 1952 until 1985 according to the replanting schemes launched by the government. In 1952, about 7,084 acres were replanted when subsidies were first introduced.

In the second scheme a phonemenal increase was seen when more than 306,000 acreas were replanted. This was a 4000 % increase over the previous scheme in which the annual rate of replanting was over 43,000 acres. Replanting grants had by this time only increased by 25%. In the third scheme, subsidies was raised by a further 20% and this led to an 82% increase in replanting. By the end of the third scheme, there was a definite pattern of positive correlation between subsidy rate increase and hectares replanted. However, this trend changed in the fourth scheme. Although grants increased by an additional 25%, replanted hectares declined substantiablly. The same pattern recurred in 1978-80 when there was a 71% drop in the rate of replanting despite an increase in grants. However the 1981 increase in grants was accompanied by accelerated replanting.

TABLE 6.15: Replant Grants and Replanted Acreage in S/H, 1952-85

Scheme No.	Year	Replanting Grant		Replanting Level	
		M$ / acre	%	Acres	%
1	1952-52	400	-	7,084	-
2	1953-59	500	25	306,527	4227
3	1960-66	600	20	560,690	82.9
4	1967-70	750	25	209,209	-62.7
5	1971-77	900	20	363,584	73.8
6	1978-80	1200	33	105,716	-70.9
6	1981-85	2200	83	341,848	223.4

Source: Calculated from Table 6.6 and Appendix Table 14.

In order to find out the actual trend, we shall employ simple regression techniques using Ordinary Least Squares to find out the elasticity of hectares replanted with regard to subsidies. However, the time series data used is for 19 years from 1968 to 1986. It is hypothesised that hectares replanted is a function of 3 independent variables, namely replanting grants (REGRANT) (M$/ha.), the price of rubber (RUBBERP)(M$/kg) and total allocation for replanting of RISDA (TOTSUB) (M$ million). REGRANT and TOTSUB are in real terms after being deflated by the Consumer Price Index and RUBBERP is lagged for one year. The result of our analysis is produced in Table 6.16 below.

TABLE 6.16: Regression Result of REGRANT on Hectares Replanted

Varible	Coeff	Std. Error
Constant	4.4791	6.2553
	(2.6636)	
REGRANT	0.6101*	0.4222
	(1.4450)	
RUBBERP	-0.6862+	0.2971
	(-2.3095)	
TOTSUB	-0.3843+	0.1649
	(-2.3304)	
R2	0.51	
RBAR2	0.40	
DW	1.21	

+ = significant at 5 %, * = significant at 10 %

Coefficients are in elasticities

T - statistics are in paranthesis

This simple model managed to explain about 40% of total variation in the dependent variable after considering the adjusted R2. All three independant variable are significant.

REGRANT is significant at the 10 % significance level and have a positive sign as expected. This means that a 10 % increase in replanting grants would lead to a 6 % increase in hectares replanted. Hence, the policy of increasing replanting grants adopted by the government seems to have a positive effect. However, the other variable, RUBBERP although significant at the 5 % significance level is negatively correlated with hectares replanted where a 10% increase in the price of rubber is expected to lead to a 7% decrease in acreage replanted. In the context of smallholding rubber, this result is not surprising. We have seen that most tappers who did not replant their rubber owned less than 4 hectares. An increase in the price of rubber would be a disincentive for smallholders to replant because they would prefer to reap the short term benefit of a price increase and hence will continue to tap their old trees because the opportunity cost of replanting would be very high for them. In fact, this is a problem for the government in its effort to encourage replanting. While an increase in the price of rubber would make the smallholders better off in the short run, it is bad for the country in the long run if this were to prevent smallholders from replanting their old trees. However, this situation only applies if old trees are still producing latex.

If trees do not produce any latex, a price increase would not have any effect on the smallholder because he has nothing to sell. Another apparently strange result is the TOTSUB variable which is significant at the 5 % level but negatively correlated with hectares replanted. A 10 % increase in total allocation towards replanting in general tends to decrease hectares replanted by 4%. What this means is that either an increase in the total allocation for RISDA is not spent entirely on replanting or that some funds are diverted to other acitivities not directly related to replanting but for the welfare of smallholders. This is a feasible explanation in view of the current strategy of RISDA to adopt the multiple approach to assist smallholders. Notice that the results obtained above is at variance with that at the farm level as shown in the next chapter. What we can conclude from this is that the trend at the national level and those at farm levels may not converge but rather give different results either because of a different data set or because of the realities of the situation.

Yield Response

The second regression we want to do is to find out the yield response of replanting grants. It is hypothesised that yield of smallholders is a function of 4 independent variables, namely REGRANT, TOTSUB, RUBBERP and total hectares replanted (REPHA). The result of the regression is given in Table 6.17.

This model gives a better fit because it managed to explain about 53 % of total variation in the dependent variable

after considering the adjusted R2. Although REGRANT is significant at the 5 % significance level, it it negatively correlated. A 10 % increase in REGRANT would lead to a 5 % fall in yield. Since in the first model REGRANT is positively correlated with hectares replanted, we would have thought that REGRANT would increase yield in this model.

TABLE 6.17: Regression Result of REGRANT on YIELD-(1968-86)

Varible	Coeff	Std. Error
Constant	6.2553	0.9568
	(6.5373)	
REGRANT	-0.4914+	0.2098
	(-2.4323)	
TOTSUB	-0.1246*	0.0900
	(-1.3837)	
RUBBERP	0.5270~	0.1618
	(3.2562)	
REPHA	-0.0970	0.1238
	(-0.7830)	
R2	0.64	
RBAR2	0.53	
DW	0.96	

~ = significant at 1 %

+ = significant at 5 %

* = significant at 10 %

Coefficients are in elasticities

T statistics are in paranthesis

However, the result does not show this. This means that although the rate of replanting is important and might influence yield to increase, it need not necessarily happen. This is an important point to note. In this connection, it is relevant to quote the findings of the Lower Trengganu Development Study (51) which reports that while replanting has been successful in terms of acreage replanted, there is no quantitative evidence that the programme has improved rubber production or income of smallholders. This is because of the following reasons:-

a) that smallholders undertook replanting in order to get and use the subsidy for consumption purpose only.

b) the success rate of replanting is low because many young rubber trees die before they reach maturity through a variety of causes like fires, wild animals, etc.

c) trees were infected with diseases and hence affected their productivity.

d) trees which were successfully replanted were left idle because of labour shortage, and

e) most smallholdings were poorly managed.

For example, in some areas of Trengganu, only about 50 % of rubber trees were tapped and up to 30% of replanted rubber abandoned. Although there is no evidence that this condition is found among all smallholders in the country, it is a cause for concern.

RUBBERP is positive and significant in explaning yield. A 10% increase in the price of rubber would lead to 5% increase in yield. This result is consistant with the result of the first model because a secular increase in price is an incentive for smallholders to produce more. In fact `slaughter tapping ' is commonly practised during periods of high prices where smallholders try to extract the maximum yield from their trees even though it would spoil the trees in the long run. However, if trees were already old and due for replanting, then this practice is encouraged. Again TOTSUB variable although significant is negatively correlated with yield. The explanation given above may also apply in this case. REPHA is not meaningful at all in explaning yield.

Total Production Response

The third regression we want to estimate is the total production response. It is hypothesised that total production is a function of 4 variables, namely REGRANT, RUBBERP, REPHA, and yield per hectare (YIELDHA) (kg /-ha). The result of the regression is given in Table 6.18.

This model managed to explain about 88 % of total variation in the dependant variable after considering the adjusted R2. REGRANT is significant at 5 % significance level and is positive. A 10 % increase in REGRANT would lead to a 2 % increase in total production. Although the increase is not big, it is nevertheless quite significant. Although there seems to be a contradiction between the result in the yield function, in the

aggregate, REGRANT seems to have a positive effect of production. But the most significant variable as expected is YIELDHA which is significant at the 1 % significance level. A 10% increase in YIELDHA would lead to a 12 % increase in total production. RUBBERP is not significant while REPHA is quite significant at 5 %. A 10 % increase in REPHA would lead to a 1 % increase in total production. This is of course an expected result and is a justification for replanting.

TABLE 6.18: Regression Result of REGRANT on Total Production

Varible	Coeff	Std. Error
Constant	-2.3043	0.9393
	(-2.4531)	
REGRANT	0.2065+	0.1465
	(1.4090)	
YIELDHA	1.8888~	0.1620
	(7.3383)	
RUBBERP	-0.0303	0.1363
	(-0.2221)	
REPHA	0.1001+	0.0658
	(1.5213)	
R2	0.91	
RBAR2	0.88	
DW	1.21	

~ = significant at 1 %

+ = significant at 5 %

Coefficients are in elasticities

( ) = statistics are in paranthesis

Effect of Replanting on Income of Smallholders

Due to the limitation of data we are not able to regress the effect of replanting grants on income of smallholders. We will be able to do this in the next chapter. Here, we would like to produce some evidence from the RISDA Census which shows the effect of replanting on the income of both participants and non-participants.

TABLE 6.19: Effect of Replanting on Income - 1977

Income/Cap. M$)		Bumiputra %	Chinese %	Indian %	Others %	Total %
<20	P	14.7	9.5	13.8	13.2	13.1
	NP	14.2	9.0	12.3	17.8	13.5
20-44	P	49.4	41.1	45.8	48.1	46.9
	NP	53.2	42.2	53.6	49.1	51.4
>45	P	35.9	49.4	40.4	38.7	40.0
	NP	32.6	48.8	34.1	33.1	35.1
Total	P	100	100	100	100	100
	NP	100	100	100	100	100

Source : RISDA (1977), Table 4.25, p. 163

P = Participant: NP = Non-Participant

We noted that it was necessary for smallholders to replant in order to increase productivity and hence increase their income levels. To find out whether this is true, we will see RISDA's data. For this purpose it is necessary for us to compare

the per capita income distribution of participants with non-participants as shown in Table 6.19 which gives the following information :-

a) that slightly less participants (13.1%) were in the lowest per capita income group category as compared with non-participants (13.5%).

b) that the middle per capita income category had more non-participants (51.4%) than participants (46.9%).

c) that the highest per capita income category had higher proportion of participants (40%) than non-participants (35.1%).

The above pattern which shows that more participants were located in the higher income category is true for all races. However, although income distribution of the two groups is in the expected direction, the differences are quite small and rather less than expected. The question to pose is, why has replanting had less impact on incomes of participants. According to RISDA, household size and size of holding are directly related to levels of living among smallholders. Although the size of smallholding is more important in determining poverty, both factors tend to reinforce each other and hence produced poverty among the smallholders. Table 6.20 shows to what extent household size and size of holding had an impact on per capita income of smallholders.

TABLE 6.20: Ave. H/H Size and Holding Size By Cat. of Income 1977

Income Cat.	Bumiputra		Chinese		Indian		Others		Average	
(M$/mt)	(HH)	(LS)	(HH)	(LS)	(HH)	(LS)	(HH)	(LS)	(HH)	(LS)
< 20	8.8	1.90	12.3	2.68	10.6	2.50	8.6	2.59	9.7	2.11
20 - 44	6.1	2.01	8.4	3.22	7.9	2.55	6.4	2.73	6.8	2.38
>45	3.8	2.14	4.9	3.70	4.8	3.55	3.7	3.05	4.2	2.80
Average	3.7	2.04	7.1	3.40	7.0	2.95	5.8	2.81	6.1	2.51

Source: RISDA (1983) Table 4.27, 4.29, pp 162 & 168

Note: HH = Household Size: LS = Land holding Size (in hectares)

Table 6.20 shows average household size of participants and holding size according to income category. It can be seen that poor participants, earning less than M$20.00 per month had an average household size of 9.7 members which is more than twice the average size of non-poor participants earning more than M$45.00 per month which constitute only 4.2 members. This means that poorer participants have bigger household size than relatively better-off participants. Also the poor had the smallest average holding size of 2.1 hectares compared to 2.4 hectares for medium income category and 2.8 hectares for the highest income category.

From Table 6.20 it is clear that both holding size and household size are positively related to income differentials that exist among participant households. Poor participants have the largest household size but smallest holdings size while non-poor participants have the smallest household size and largest

holding while medium income participants are in between. Is is also clear that household size differentiation is more important than holding size differentiation in explaining poverty among smallholders.

Impact of Replanting on Productivity

In theory, replanting can make a substantial impact on productivity levels and hence income. According to Barlow, unselected seedlings and mixed stands yielded as little as 25% of high yielding varieties. Proof of the positive impact of replanting on productivity, as we have seen, can be found by examining the yields of estates which have fully replanted. In general, smallholdings have lower average yields than estates. For example, smallhodings of less than 4.5 acres produced about 948 kg. per mature hectare compared to 1,327 kg. per mature hectare of estate holding in 1973. This difference was mainly due to the smaller proportion of high yielding material found in smallholdings (75%) compared to estate (95%). (52).

Effect of Productivity on Income

Productivity has an effect on income in two ways. Firstly, an increase in yield will also bring about higher returns per unit area. Secondly, an increase in yield will lead to a decline in costs of collection and tapping per unit area. For example, Barlow (1987, p. 271) estimated that for farms with 1.2 to 2.4 ha. of planted rubber, the family return at the price

of M$1.20 per kg. for RSS 1 rose dramatically from $280 per ha. to M$1,543 if yields obtainable are over 1893 kg. per ha. In addition, total costs also dropped from 90.9 cents per kg. per ha. for the low yields farm to 43.9 cents for the high yield farm.

Effect of Replanting on Income

According to RISDA, there is a weak but positive correlation between non-participation rate in replanting and the incidence of poverty. It also found that the failure of smallholders to participate in replanting may be due to poverty. However, in many cases even the poor have participatd in replanting. Smallholder participation in replanting does have an impact on their income especially because poor participants were much poorer to begin with. But a significant finding is that, although participation in replanting have provided benefits, it has not been sufficient to uplift smallholders above poverty levels.

7.0 SUMMARY AND CONCLUSION

The objective of undertaking the regression analysis above is mainly to find out whether REGRANT is important as a factor in influencing hectares replanted, yield and total production. It is found that REGRANT is indeed significant in all three models but only positive in the hectares equation and total production equations and negative in the yield equation. This result is however at variance with those of the next chapter. We shall discuss its implication in the next chapter.

From the above analysis, we have seen that the rubber economy is the mainstay of the Malaysian economy. In order to sustain its lead as the world's largest producer of natural rubber, the government, since 1952 have introduced replanting grants in order to encourage smallholders to replant their old rubber trees. We analysed that in order to sustain high yields, it is necessary for smallholders to replant their trees with high yielding clones. The system of replanting grants have ensured that replanting is undertaken at regular intervals. We also examined the sources of funds that goes towards this subsidy, namely cess collections and export duty. Touching on the impact of subsidies, the regression analysis shows that increase in subsidy rate does correlate with increases in hectarage replanted. This finding therefore justifies government raising the subsidy rate. The effect of an increase in the price of rubber had a negative correlation with replanting because smallholders preferred to earn present income rather than future income through replanting. We also used the findings of other studies to find out the effect of subsidies on production and income. It was found that the effect on income was relatively small and inadequate to lift smallholders above poverty levels. On production effects, it was found that output does increase substantially after replanting was undertaken. As to who benefit from this subsidy, it is established that smallholder does indeed benefit from them because only holdings below 4 ha. were given assistance.

NOTES

1. For an account of the early history of rubber smallholders in Malaysia, see the following work :-
J. H. Drabble (1973), Rubber in Malaya : 1876 - 1922, The Genesis of the Industry, Oxford University Press, Kuala Lumpur; J. H. Drabble, " Peasant Smallholders in the Malayan Economy : An Historical Study With Special Reference to the Rubber Industry ", in J. C. Jackson and M. Rudner (eds), (1980), Issues in Malaysian Development, Heinemann Educational Books; See also T. R. McHale, " Rubber Smallholdings in Malaya: Their Changing Nature, Role and Prospects", Malayan Economic Review, Vol. 10, 1965, pp. 36 - 37 for the reasons why smallholders find rubber cultivation convenient.

2. P. T. Bauer (1948), The Rubber Industry : A Study in Competition and Monopoly, Longmans, London; Lim Teck Ghee (1977), Peasants and their Agricultural Economy in Colonial Malaya, 1874 - 1941, Oxford University Press, Kuala Lumpur; S.A. Baharuddin (1986) From British to Bumiputra Rule, Institute of Southeast Asian Studies, Singapore and other economic historians have amply documented the colonial bias against rubber smallholders.

3. T.R. McHale, ibid, p. 46 notes that political independence for Malaya in 1957 shifted government goals from development per se toward development of Malayan interest which is manifested in direct intervention in smallholder sector subsidisation policies and this is justified on social and political grounds.

4. See Statistical Appendix Tables 17 & 18

5. The citation for the three reports are as follows :-
Federation of Malaya, Interim Report of the Rubber Smallholdings Enquiry Committee, in Federation of Malaya, Minutes and Council Papers of the Federal Legislative Council (Third Session), February 1950 - January 1951 quoted in Lee Hock Lock (1978), Public Policies and Economic Diversification in West Malaysia , 1950 - 1970, University of Malaya Press, Kuala Lumpur, p. 196; Federation of Malaya (1954), Report of the Mission of Enquiry into the Rubber Industry of Malaya, Government Printer, Kuala Lumpur; International Bank for Reconstruction & Development (1955), The Economic Development of Malaya, The Johns Hopkins Press, Baltimore, 2nd Printing, 1960, pp. 47-75.

6. The proceeds from this tax were earmarked solely for rubber replanting. The share of the smallholders was paid into a fund called Fund B while for estates it was called Fund A. From Fund B, grants were made to smallholders who wanted to replant at M$400 per acre. On the other hand, estates were allowed refunds of their replanting expenditure on providing proof of replanting to the authorities.

7. Among the important findings of the Mission of Enquiry into the Rubber Industry of Malaya (more commonly known as the Mudie Mission) :-
a) More than 50 % of estate and smallholding areas were under

ordinary seedlings and over 30 years old
b) 64 % of total planted acreage for estates and 90 % of smallholdings were under low yielding trees
c) Proportion of immature rubber trees to total planted area was only 11 % in 1953 for estate sector
d) If there were no replanting, by 1973 there would be net loss of 140,000 tons in production
e) that natural rubber could not compete with synthetic rubber unless manage to reduce costs

8. Lee Hock Lock (1978), op. cit., p. 202

9. Ministry of Primary Industries (1981), Strategies and Programmes for Implementing a Dynamic Production Policy for Malaysian Natural Rubber, 8 July, (in Malaysian), mimeo. It was formulated with the following objectives :-
a) to accelerate the level of replanting
b) to use high yielding clones during replanting
c) to encourage good agricultural practices among smallholders
d) to encourage widespread use of the stimulant etherel among smallholders

10. Reasons for the low productivity of smallholders vis-a-vis the estates :-
a) significant proportion of smallholder acreage have not been replanted (for example, 1980 - 313,725 ha.)
b) replanted areas not getting satisfactory yields because of the use of low yielding cultivars during the replanting stage
c) poor agronomic practices among the smallholders.

11. Malaysian Rubber Research & Development Board (1983), The Malaysian Natural Rubber Industry, 1983 - 2000 : Report of the Task force of Experts , Kuala Lumpur.

12. Ministry of Agriculture (1984), National Agriculture Policy, 12 January. The NAP was formulated to ensure a balanced and sustained growth rate in the agricultural sector vis-a-vis the other sectors of the economy. It set out the guidelines for agricultural development up to the year 2000. The NAP also indicated that the main thrust regarding rubber will be to expand production without appreciably increasing the number of hectares planted through the application of technical and research innovations. See pp. 10-11.

13. Ministry of Land and Regional Development (1985), The Future of Smallholders' Rubber Production, (in Malaysian), mimeo

14. Ministry of Land and Regional Development (1985), ibid, Among the recommendations of the policy paper include the following :-
i) that smallholders should be free to decide which crop they would like to cultivate
ii) that the government should reconsider the output target and total area that should be devoted to rubber based on the practical realities of market prices and rates of return
iii) that Malaysia should determine a " core " in the economy which will continue to produce rubber based on agro-climatic conditions

iv) that if the government wants to maintain a national rubber output, rubber will then have to be a highly subsidised crop like padi
v) that the only way to increase rubber productivity would be to cultivate it on a collective or group basis on the lines of plantation
vi) that rubber land use should be intensified so as to gain maximum benefit
vii) that agro-based industries based on rubber should be established

15. Many studies discovered that rates of returns on rubber investment is very low compared to oil palm. For example see Robert B. Campbell, et. al. (1985), Study on the Restructuring and Modernisation of Smallholder Agriculture in Malaysia, Development Alternatives, Washington D.C., Appendix 1 calculated that the financial rates of return for RISDA mini-estates range from only 5-8 per cent while for oil palm it was between 20-25 per cent. The analysis suggests that the rate of return on mini-estate rubber is likely to be below the opportunity cost of capital even under the most optimistic price and yield assumptions. This, however, does not suggest that the development of rubber should stop because there will continue to be positive social returns in many areas where crop conversion is either not feasible or desirable. But the analysis does suggest that new commercial investment in rubber is unlikely to occur unless there is a positive outlook in the future. To have an idea of declining output and rubber estate acreage versus smallholders performance see the Table below :-

Comparision of Estates and Smallholdings in Ha. & Yield, 1930-83

Year	Estate					Smallholder				
	Ha	%	Prod	%	Yield	Ha.	%	Prod	%	Yield
1930	308	61	-	-	-	197	39	-	-	-
1950	793	53	-	-	-	700	47	-	-	-
1960	889	45	438	56	758	1,076	55	339	44	436
1965	789	39	515	56	952	1,256	61	409	44	590
1970	677	33	631	50	1,189	1,382	67	638	50	752
1975	583	29	592	41	1,272	1,408	71	867	59	962
1980	511	26	595	39	1,428	1,494	75	935	61	964
1983	469	24	565	36	1,485	1,527	77	997	64	1,031

Note: Ha = '000 ha ; Prod = '000 tons; Yield = kg./ha. All figures refer to to the whole of Malaysia except 1930, 1950 & 1960
Source: C. Findlay, J. Western & S. Chamala (eds) (1985), Smallholder Rubber Production and Policies, Australian Centre for Agricultural Research,pp. 73 & 96

16. Under rubber replanting regulations, smallholders are eligible to get replanting assistance to replant rubber or 18 other approved crops like oil palm, cocoa, fruits, etc. But the rate given for replanting rubber is higher compared to other crops. But this assistance is only given once whereas for rubber it is given on a continuous basis for every replanting cycle of 25 - 30 years. It is mainly for this reason that most smallholders still prefer to plant rubber to other crops. For example, between 1953-83, out of 484,744 smallholders who applied for first and second round replanting

involving 1.1 million hectares, 81 per cent applied to replant with rubber while only 6 per cent applied to replant with oil palm and 13 per cent with other crops. See Robert B. Campbell (1986), et.al., ibid, Annex 6.

17. S/H Hectarage Replanted with Rubber & Other Crops - (1975-82)

Year	Rubber	%	Ot. Crops	%	Total Ha.	% All Crops
1975	20,709	62.4	12,470	37.6	33,179	100
1976	14,250	72.2	5,485	27.8	19,735	100
1977	12,789	70.2	5,419	29.8	18,208	100
1978	13,255	69.0	5,943	31.0	19,198	100
1979	14,186	63.3	8,205	36.7	22,391	100
1980	15,300	66.6	7,685	33.4	22,985	100
1981	22,624	76.8	6,827	23.2	29,451	100
1982	23,699	76.0	7,484	24.0	31,183	100

Source: C. Findlay, J. Western, S. Chamala (eds) (1985), ibid. p. 87

18. i) RISDA (1982), Interim Report of Rubber Smallholders Census, Peninsular Malaysia, 1977, November (in Malaysian)
ii) RISDA (1983), Laporan Akhir: Banci Pekebun Kecil Getah Semenanjong Malaysia, 1977: Analisa Profail Sosio-Ekonomi Kemiskinan and Penyertaan Dalam Rancangan RISDA, RISDA & Universiti Sains Malaysia, Ogos 1983.

19. RISDA (1983), ibid, p. 1

20. A. Ghafar Wahab, (1985), in C. Findlay, et. al., ibid, p. 97 mentioned the following problems facing smallholders :-
a) remote and scattered nature of holdings
b) small and uneconomic size of holdings
c) lack of infrastructure facilities
d) low yields and income coupled with uncertain and unstable prices
e) low degree of replanting
f) low level of education and training
g) limited scope of on-farm activities and lack of employment opportunities
h) lack of marketing system for inputs and outputs
i) increasing population pressure on land and other resources
j) lack of and backward nature of smallholder equipments

21. RISDA (1983), ibid,

22. RISDA (1980), Efforts to Accelerate Rubber Replanting in Kedah, Perlis, Kelantan and Trengganu, in Malaysian, mimeo

23. Ozay Mehmet (1986), Development in Malaysia: Poverty, Wealth and Trusteeship, Croom Helm, London, pp. 54 - 56.

24. Poverty Households in Plantation Agriculture ('000)

Sector	1970		1980		1983	
	Poverty h/h	%	Poverty h/h	%	Poverty h/h	%
Agriculture	582.4	73.6	443.7	66.7	497.6	69.3
Rubber S/H	226.4	28.6	175.9	26.4	247.9	34.5
Oil Palm	2.0	0.3	1.9	0.2	1.5	0.2
Coconut S/H	16.9	2.1	12.8	1.9	10.1	1.4
Estate Wkr	59.4	7.5	39.5	5.9	57.7	8.1
Plantation	304.7	38.5	230.1	34.4	317.2	44.2
Non-Agric.	209.4	26.4	222.4	33.3	220.0	30.7
Total	791.8	100.0	666.1	100.0	717.6	100.0

Source: Ozay Mehmet (1986), Development in Malaysia: Poverty, Wealth and Trusteeship, Croom Helm, London, Table 2.3, p. 20

25. Ozay Mehmet (1986), ibid, p. 30. And according to Robert B. Campbell, et. al. (1985), op. cit., p. 69 and Table 4.1 that a 7.5 ha. rubber smallholding could probably generate sufficient gross income to give a smallholder family of 5.4 persons a monthly income above the poverty income of M$367.50 at a rubber farm gate price of M$1.60/kg. and a per ha. yield of 1525 kg.

26. See Tan Siew Hoey (1986), " Padi Land Reform in Perspective " Paper presented at Workshop on Usage and Ownership of Padi Land, 27 February, Malaysian Institute of Strategic and International Studies, Kuala Lumpur.

27. For a comprehensive account of rubber replanting and the history of rubber replanting programmes in Malaysia from 1950s to 1970s, see the following work:-
Gayl D. Ness (1967), Bureacracy and Rural Development in Malaysia, University of California Press, Berkeley & Los Angeles; A. Halim Ismail (1970), Some Economic Aspects of Peasant Agriculture in Malaya, Ph. D. thesis, University of Oxford; C. T. Edwards (1970), Public Finances in Malaysia and Singapore, Australian National University, Canberra; P. Radhakrishnan (1974), Role of Rubber in West Malaysian Economy, Ph. D. thesis, Stanford University; M. Rudner (1976), " Malayan Rubber Policy : Development and Anti - Development During the 1950s ", Journal of Southeast Asian Studies, Vol. 7; C. Barlow (1978), The Natural Rubber Industry, Its Development, Technology & Economy in Malaysia, Oxford University Press, Kuala Lumpur; Lee Hock Lock (1978), ibid; Mark Thomas (1982), Appraisal of Rubber Replanting in Malaysia, SOAS Development Seminar, Working Paper 451; Tan Tat Wai (1982), Income Distribution and Determination in West Malaysia, Oxford University Press, Kuala Lumpur; C. Bailey (1983), The Sociology of Production in a Rural Malay Society, Oxford University Press, Kuala Lumpur; Ani Arope, et.al.(1983), Rubber Owners' Manual: Economics and Management in Production and Marketing, Rubber Research Institute of Malaysia, Kuala Lumpur.

In this chapter, we are mainly concerned with replanting by smallholders. Replanting in estate sector, however, is almost complete. See Table below and Appendix Table 13 for yearly figures. Estates rely on commercial banks and other financial institutions plus replanting grants for financing replanting expenditure whereas most smallholders only rely on government grant. But unlike small-

holders, estates receive refunds of their replanting expenditure on proof of production quaterly. See Lee Hock Lock (1978) op. cit. and Ani Arope, et, al. (1983), op. cit., for an analysis of estate replanting.

Percentage Estate and Smallholding Area Replanted - 1970-82

Year	Estate	Smallholding
1970	90	46
1971	92	49
1972	93	52
1973	95	56
1974	95	59
1975	97	62
1976	98	64
1977	98	66
1978	98	68
1979	99	70
1980	99	72
1981	100	75
1982	100	78

Source: S. Tugiman, et. al, " Approaches to Agricultural Extension and Development in the Rubber Smallholding Sector in Malaysia, " Table 2, p. 87 in C. Findlay, et. al. (1985), op. cit.

28. C. Barlow (1978), op. cit. and Mudie Report (1954), op. cit According to R.B. Campbell, et. al. (1985), op. cit., p. 68 by encouraging smallholders to replant and thus increasing yields at rates which might balance the declining estate production will require replanting 40,485 ha. per year (which is 3 % each year for average life of 33 years).

29. Given the fact that current rubber smallholding size averages about 2.4 ha. which is much below the recommended size of 7.5 ha., considerable consolidation of holdings is required in order to ensure viability of this sector. Such consolidation could be expected to have important financial and social implications. Related to this, the mini-estate concept involves the the clearing of contiguous parcels of smallholders land with a minimum size of 100 acres. RISDA takes over temporary ownership of the land and hires contractors to do the replanting work and supervises the whole operation until it reaches maturity. Normally, mini-estates give better results and cost lower compared to individual replanting due to economies of scale and better management. See RISDA (1979), Mini - Estate Manual, Kuala Lumpur for full details of operation. As of June 1984, 273 mini-estates have been opened covering 31,580 ha. See R. B. Campbell (1985), op. cit., Annex 6, Table 6.2. However, there are some quarters who are critical of the mini-estate concept of development. According to C. Barlow and S. Jayasuriya (1984), " Problems of Investment for Technological Advance, " Journal of Agricultural Economics, Vol. 35 (1), mini-estates or government-sponsored management schemes tend to stifle individual initiative and entrepreneurship and may produce the " fossilisation " of farmers' attitude.

30. RRIM 600 series is a Class 1 clone. Class 1 clone refers to planting material suitable for large-scale planting. Hence, the performance of the clones are usually confirmed by records from commercial areas. RRIM 600 series is also a widely recommended clone extensively used by smallholders.

31. C. Bailey (1983), ibid., p. 141.

32. Ani Arope (1982), " Increasing Agricultural Productivity Through Technology Transfer ", Agricultural Institute of Malaysia Seminar, The State of Malaysian Agriculture - A Critical Review, 12 - 14 August, p. 33.

33. Ani Arope (1982), ibid, p. 7.

34. World Bank (1984), op. cit., agrees that the replanting subsidy does in fact reach the smallholders for whom the subsidy is meant unlike the case of most subsidies where the benefit goes to the rich and big farmers.

35. C. Barlow & S. Jayasuriya (1984), " Problems of Investment for Technological Advance: The Case of Indonesian Rubber Smallholders ", Journal of Agricultural Economics, Vol. 35 (1).

36. RISDA (1986), RISDA's Extension Programme To Develop the Smallholder Sector, (in Malaysian), p. 67.

37. Australian Agricultural Consulting and Management Co. Pty. Ltd (1981), Lower Trengganu Development Study, Australian Development Assistance Bureau, Government of Malaysia and State Government of Trengganu, p. 159. In addition to government grants and cess payments, RISDA also derives its funds from other sources as stipulated in Section 2, Rubber Industry (Replanting), Fund 1952 namely loans, proceeds from investment and monies derived from other sources. See Table 6.11 in the text.

38. RISDA (undated), Replanting in the Context of Development of Smallholders, (in Malaysian)

39. A. Halim (1970), Some Economic Aspects of Peasant Agriculture in Malaya, Ph. D. Thesis, University of Oxford, pp. 215-222

40. RISDA (1980), Rational Basis in Calculating Increase in Replanting Grant Rate, in Malaysian, mimeo and RISDA (1980), Increase in Replanting Grant Rate, in Malaysian, mimeo, 20 November.

41. Australian Agricultural Consulting and Management Co. Pty. Ltd. (1981), ibid, p. 158.

42. See New Straits Times, 13 November 1986 which captioned " RISDA Hit By Fall In Cess Tax ".

43. See Statistical Appendix on RISDA's programmes.

44. World Bank (1984), op. cit. Vol. 3, Annex 4, para 15, p. 14.

45. Many writers have discussed this issue of regressiveness of taxes against rubber smallholders . See the following work: C. T. Edwards (1970), op. cit., p. 244; L. S. Ching & T.M. Tay (1977), " A Note on the Restructured Export Duty on Rubber, "; Malaysia Rubber Review, Vol. 1 (2/3) Dec., pp. 27-28; Sundaram, J.K. & Shari, I. (1981), " Income Distribution and the Role of the State in Peninsula Malaysia: A Review ", in H. Osman-Rani, Jomo, K.S. & I. Shari (eds), Development in the Eighties, Jurnal Ekonomi Malaysia, No. 3/4, Universiti Kebangsaan Malaysia, p. 242 which estimated that the average rubber smallholder was actually paying a tax rate on his rubber income equal to the rate paid by households subject to an income tax with income of M$30,000 a year. The World Bank also says that measured as a proportion of income from rubber cultivation, export taxes are seen to reduce returns by almost 40 % World Bank (1984), op. cit., Vol. 1, para 5.16, p. 72.

46. See the following works which discuss about the question of biasness of research against smallholders, C. Barlow & O. S. Peries (1977), " On Some Biases in the Generation of Technologies by Rubber Research Instituttes, " Journal of Rubber Research Institute of Sri Lanka, Vol. 54; C. Barlow & S. Jayasuriya (1984), " Bias Towards the Large Farm Sub-Sector in Agriculture Research: The Case of Malaysian Rubber, " Research and Development in Agriculture, Vol. 1 (3); Y. L. Lee & J. W. Longworth (1985), " Bias in Research: The Case of Rubber Growing in Malaysia, " Journal of Agriculture Economics, Vol. 36 (1).

47. World Bank (1984), op. cit., Vol. 2, pp. 87 - 89.

48. We believe that the World Bank was influenced by rumours of allegations of corruption in RISDA in 1983. On allegations that RISDA had misappropriated M$130.00 million cess funds, in part to construct a luxury headquarters in Kuala Lumpur, see New Sunday Times, 28 August, 1983. In addition, an economist, Professor Mokhtar Tamin of the University of Malaya said in an interview with Business Times, 10 October, 1983 as follows :

" If the clones that are given to the farmers are good clones it will appear in its output later on. But with a lot of RISDA's replanting, the output has been very miserable. So what has been happening ? The question is, have the clones that had to be planted been those good clones ? The clones cost money and recommended clones are difficult to get and more expensive. All the cases of corruption now coming up against RISDA officers seem to validate my suspicion. "

49. In fact the issue of whether RISDA should diversify to other activities besides rubber have long been debated within RISDA and has been a contentious issue ever since. It culminated with the resignation of the former Director-General of RISDA who believed that RISDA should diversify. For example the following quotation has been credited with this person as quoted in Malaysian Business, November, 1977,

" Behind every tree there is a man. Behind the man there

is a family. It is this family that forms the community - the backbone of Malaysia's economy. It is towards this community that RISDA's development strategy is directed ".
However, today it is accepted policy that RISDA be diversified.

50. See Robert B. Campbell, et. al. (1985), Study on the Restructuring and Modernization of Smallholder Agriculture in Malaysia, Development Alternatives, Inc., Washington D. C., Annex 2 which mentioned that in 1984 the duty rates for rubber was derived from a system comprising threshold prices, gazetted prices and ad valorem prices. According to the report, the government is actively considering the abolition of rubber export duties and studies are on-going to assess the likely effect on prices received by smallholders.

51. Australian Agricultural Consulting and Management Co. Pty. Ltd (1981), op. cit., p. 159.

52. C. Barlow (1978), ibid, Table 6.1, p. 195.

CHAPTER SEVEN

IMPACT OF SUBSIDIES IN MALAYSIAN AGRICULTURE - EVIDENCE FROM RUBBER SECTOR : A MICRO PERSPECTIVE

1.0 INTRODUCTION

Chapter 6 discussed and analysed rubber replanting activities of the smallholders using national data. In this chapter, we will use primary data from a survey conducted among rubber smallholders in Malaysia to analyse the allocative and redistributive effects of replanting subsidies on smallholders.

Objective of Chapter

The discussion of this chapter will be similar in approach to the previous one. The purpose is to supplement the findings of Chapter 6. Here we will cover the following aspects :-

a) Socio-economic profile of rubber smallholders in Perak
b) Analysis of rubber replanting subsidies in Perak
c) Analysis of farmers' attitude to replanting grants in Perak
d) Regression analysis of effect of replanting grants
e) Findings and conclusion

2.0 CHOICE OF AREA STUDIED

For the survey, we decided to select the rubber belt of the state of Perak which is located in the north-western part of Peninsular Malaysia. Since Perak is a big state, we decided to undertake a stratified random sample covering about 87 smallholders

all over the rubber growing areas of Perak. Among the reasons why we chose Perak as the study area were as follows :-

a) It is the second most important rubber producing area in Malaysia,

b) It was convenient for the author to conduct the study in this area because it also covered Krian where the survey on padi farmers was carried out, and

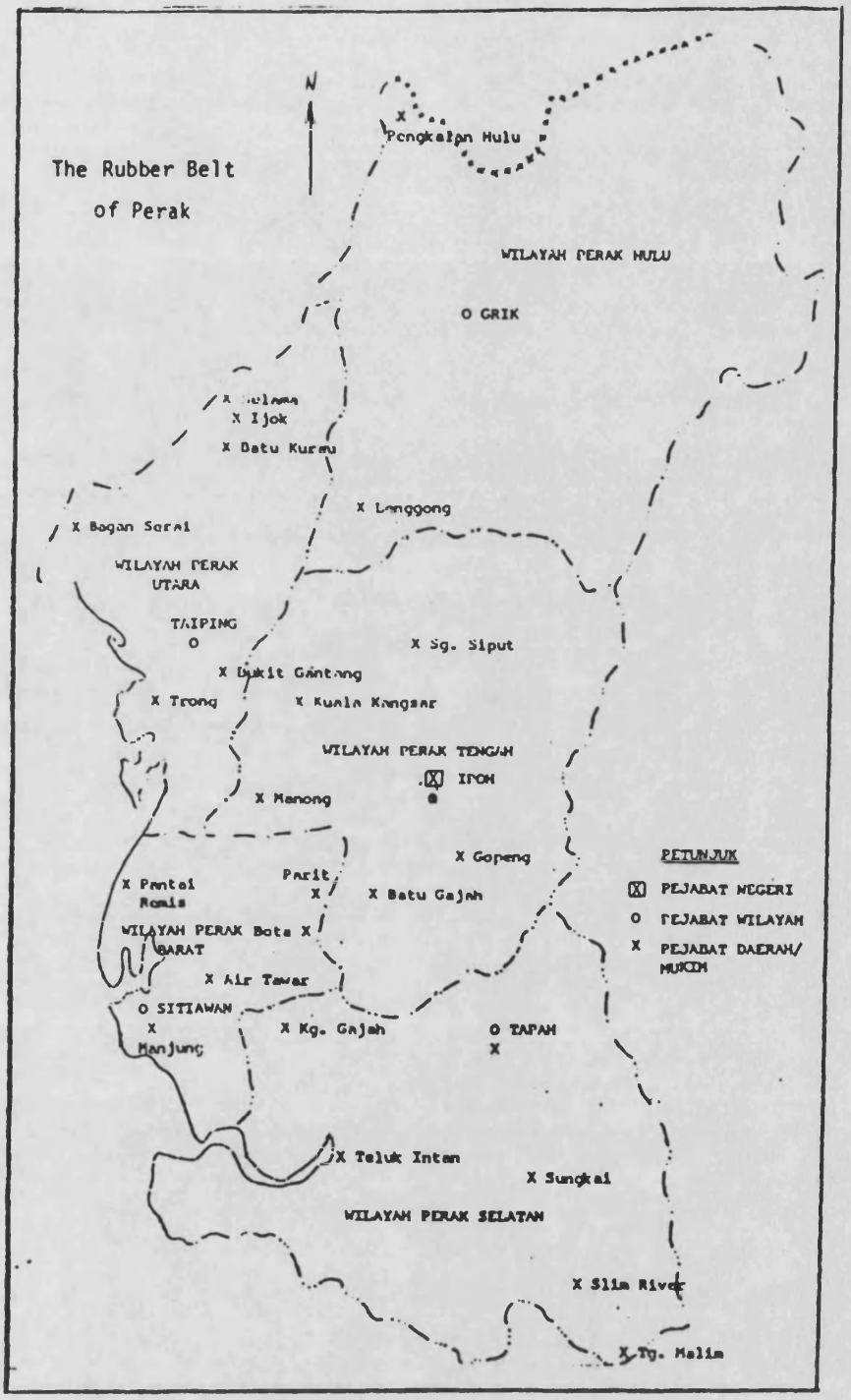
c) the author is a native of the state and is familiar with it and this facilitated the conduct of the survey.

The location map of Perak vis a vis the whole Malaysian peninsular and areas where rubber smallholders were interviewed during the survey are marked in the map given below. Table 7.1 shows the distribution of respondents and the number of respondents interviewed per location selected.

TABLE 7.1: Distribution of Respondents in Sample Survey of Rubber Smallholders in Perak

District	No. of Smallholders
Sungai Siput	15
Kuala Kangsar	15
Lenggong	16
Manjung	16
Selama	27
Total	87

FIG. 7.1 The Rubber Belt of Perak



A stratified random sample method was used to choose 87 respondents throughout the whole of Perak made up of rubber smallholders. (see Upton for a more detailed description of this method) Although the sample is thinly spread out, it is thought that this would not lead to biases in the responses of the respondents because of the homogeneity of the areas where smallholders live and worked and also the homogeneous features of the smallholders, as reflected for example in their low level of income, small size of landholdings, and all being racially Malays.

The local RISDA office assisted in the identification of villages and provided various facilities to the author in the course of the survey such as transportation, field assistants, office space, accommodation, etc. Although 100 respondents were initially chosen, due to time and resource constraint, only 87 were chosen to be interviewed. The author personally conducted the oral interviews from 12 August until 4 September 1986 using a standard questionnaire which was specially designed for the sample survey. (see Appendix for sample of questionnaire) The questionnaire is basically similar to the one used in the padi survey except for modifications to cater for the peculiarities of the rubber sector. The following information was extracted from the questionnaire :-

a) socio-economic status of smallholders

b) details of inputs in rubber cultivation

c) details of output in rubber cultivation

d) attitudes of farmers towards replanting grants

e) marketing behaviour of smallholders

3.0 SOCIO-ECONOMIC PROFILE OF RUBBER SMALLHOLDERS IN PERAK

The survey was able to generate a wealth of information on the socio-economic conditions of smallholders in Perak. In this section, the basic features of rubber smallholders in Perak will be outlined. Relevant statistics on this is detailed out in the Statistical Appendix. Where available, data in the macro chapter will be compared with that of the survey data.

Appendix Table 1 shows that more than 89 % of smallholders were above 45 years while about 40 % were above 60 years old. The average age of smallholders was about 56 years. In contrast to the RISDA data, the smallholder population in Perak is therefore much older. For example, RISDA census shows that only 21 % of smallholders were above 60 years old. Appendix Table 2 shows that the majority of smallholders were literate and only about 9 % did not attend any form of schooling. Appendix Table 3 shows that household size is relatively small, averaging about 6.1 members. Appendix Table 4 shows that mixed farming mode was common with about 63 % of smallholders cultivating rubber as a main job. Apendix Table 5 shows that other forms of economic activities pursued by smallholders were varied and comprise mainly of other agriculture, padi cultivation and orchards. Appendix Table 6 shows that the average number of working experience of smallholders was about 29 years. This reinforced the evidence that smallholders were generally older. Appendix Table 7 shows that more than 80 % of smallholders belonged to members of Smallholders Development Centres. Appendix Table 8 shows that the percentage of smallholders who were owner-operators were larger in Perak than the national average (86 % compared with

74 %) while smallholders who were tenants were less at 14 % compared with 24 % at the national level. Appendix Tables 9 and 10 shows that about 75 % of rubber holdings in Perak have been replanted and only about 25 % have yet to be replanted. The majority of holdings have been replanted after 1970s as compared with after 1960s for the national level. However, most replanted holdings were less than 2.0 ha. which covered 77 % of areas and about 90 % of cases. Appendix Table 11 shows that smallholders tend to utilise family labour more frequently than hired labour for most of the replanting job and rubber cultivation in general.

From this brief account the following things should be noted. Rubber holdings were very small with labour being relatively old and most smallholders have relatively long working experience. The educational level was low although basic literacy was evident. Family labour is predominant. Many smallholders practice mixed farming types. Owner-operation was the dominant type of tenure status. Most holdings have been replanted at least once but their size was very small. The purpose of this section has been to show that on the basis of the above features which are not very favourable to the smallholders as far as the potential of the area is concerned, the positive effect of subsidies as expected would not materialise because the institutional and structural basis of the area and smallholders concerned is not conducive. For example the problem of aged labour force, small size of holdings and low level of litreracy will affect the degree of effectiveness of subsidies. Hence, the question is not whether to give subsidies or not but whether the smallholders are able to utilise the subsidies

effectively. This is of course assuming the subsidies are given on allocative grounds. However, if subsidies are given on redistributive grounds, there might be a case. Despite this observation, in the following sections, we shall analyse the allocative and redistributive effect of subsidies. We shall also have the opportunity to see whether or not socio-economic factors play a part in determining the effectiveness of subsidy policies.

4.0 EFFECT OF REPLANTING GRANTS ON SMALLHOLDERS

Introduction

In this section, based on the field survey, we shall discuss and analyse the following :-

a) the use of resource inputs in rubber cultivation and replanting, and

b) productivity, profitability and income from rubber cultivation and replanting

Use of Resource Inputs in Rubber Cultivation and Replanting

Rubber, unlike rice is not an annual but a perennial crop. As mentioned in Chapter 6 a rubber tree has an economic life span of between 25 to 30 years. After 30 years, it is not economic to exploit it any further because yield would be diminishing or even nil. Hence, after every 30 years the tree must be replanted. We have established in Chapter 6 the estimated costs for replanting a typical average smallholding of size of less than 2.0 hectares. Statistical Appendix Table 12 shows the typical farm budget of a rubber smallholder practising mixed farming while Statistical Appendix Table 13 shows the revenue and cost profile and projected returns for a typical smallholder.

Production, Yield, Income and Profitability of Rubber.

In determining the yield profile and total output of the smallholders in the survey area, it is important to consider various factors which will have an effect on yield per unit area. Among them would include the following :-

a) age of replanted trees

b) type of clone used

c) management and upkeeping of trees, e.g. fertiliser, weeding, etc

d) density of planting

e) soil condition

f) number of tapping days per month

g) others

TABLE 7.4: Period of Replanting and Hectares

Decade	Ha.	%
1950s	1.6	0.9
1960s	47.9	26.8
1970s	93.1	52.2
1980s	35.4	20.1
Total	178.4	100.0

From Table 7.4 it can be seen that about 52 % of total rubber holdings in the survey area were replanted in the 1970s. It has been established in Chapter 6 that rubber trees yield the maximum output at ages between 10 - 20 years of age. This would mean that trees replanted in the 1970s would yield the maximum output in the survey area, assuming that the holdings are well maintained. In addition, about 20 % of land holdings have been replanted in the 1980s. However, most of the acreage replanted in 1980s are still immature. It is also of interest to note that about 27 % of smallholders have trees which are over 20 years old and hence due for a second round of replanting. Hence, the time period when trees are replanted is

important because this, among other things, will determine the productivity of rubber trees. Generally, trees which were planted in the 1970s tend to produce greater yields while trees planted in the 1950s and 1960s have relatively lower yields. On the other hand, trees which were newly replanted especially in the 1980s would begin to produce latex only in the late 1980s. Tables 7.5 and 7.6 give further details on length of replanting and frequency of replanting.

TABLE 7.5: Length of Time Replanted Trees Have Been Tapped

Years Tapped	Ha.	%
0	35.0	19.6
1 - 5	63.6	35.7
6 - 10	41.6	23.3
11 - 15	23.9	13.4
16 - 20	12.9	7.2
Total	178.4	100.0

Note: 0 years = immature trees

Table 7.7 lists out the common clones used by smallholders in Malaysia. The RRIM have been successful in propagating and introducing new clones suitable for smallholders in Malaysia. For example, in the 1950s unselected seedlings (US) were commonly used, in the 1960s TJ and PB series were popular while in 1970s and 1980s RRIM 600 series was popular. From an examination of Table 7.7, it is clear that RRIM 600 was the most popular Class I clone used by the smallholders in the survey area. This is in part due to the efforts of RISDA which recommended smallholders who received

replanting grants to use this clone type when replanting their old trees. However, smallholders who replanted on their own initiative and using their own resources used clones which were not recommended by RRIM and hence they generally got lower yields. However, this only applied to a very small minority of smallholders in our sample.

TABLE 7.6: Frequency of Occurrence of Replanting

Frequency	Ha.	%	No. of S/H	%
Once	51.7	28.8	48	55.2
Twice	84.8	47.3	30	34.5
> Thrice	42.9	23.9	9	10.3
Total	179.4	100.0	87	100.0

Table 7.8 shows the density of planting, i.e. the number of trees planted on a per hectare basis. It can be seen that about 71 % of smallholders planted between 400 to 700 trees per hectare. This worked out at an average of 583 trees per hectare. RISDA / RRIM recommended rate is about 600 to 800 trees per hectare. Hence, it is obvious that in our sample the smallholders were underplanting. This could have serious implications for the yield capacity per hectare of holdings. According to the RRIM, if the density of planting as recommended is not followed by smallholders, there is a great likelihood that the number of trees which manage to survive the immaturity stage on a per hectare basis would be smaller in numbers and consequently smallholders would only be able to get relatively lower yields on a per hectare basis.

TABLE 7.7: Distribution of Clones Used by Smallholders

Clone Type	Hectares	Years Applied
US	1.6	1950s
TJ & PB551	47.9	1960s
RRIM 600	120.0	1970s & 1980s
RRIM 605	8.9	1970s & 1980s
Total	178.4	-

TABLE 7.8: Density of Planting of Smallholders

Trees/Ha	No. of S/H	%
< 400	7	8.1
401 - 500	23	26.4
501 - 600	22	25.2
601 - 700	23	26.4
701 - 800	4	4.6
801 - 900	8	9.2
Total	87	100.0

TABLE 7.9: Average Number of Tapping Days Per Month

No. of Days	No. of S/H	%
< 14	12	13.8
15 - 20	73	83.9
> 21	2	2.3
Total	87	100.0

In Table 7.9, about 84 % of smallholders tapped between 15 to 20 days per month. The average number of tapping days was about

14.8 days per month. This worked out to about once every other day which is the norm recommended by RISDA / RRIM according to the S2/D2 system of tapping. Tapping on alternate days ensures that the life span of trees would be extended. Hence their productivity would not be affected due to excessive tapping as normally practiced in slaughter tapping. On the other hand, if trees were not chemically treated and undertapped, i.e. less than 14 days per month, their productivity might also be affected. This is especially so if trees were left for a long period of time without tapping. However, to solve the problem of labour shortages, the RRIM have recommended that tapping days could be shortened without affecting yield with the application of yield stimulants.

Tables 7.10 and 7.11 show the yield profile of smallholders in Perak before and after replanting. As a whole, yields before replanting were very much inferior to yields after replanting. Average yields before replanting only reached up to 260 kg./ha/year while average yields after replanting were over 900 kg./ha/year. In Table 7.11, the pattern of yield profile is not marked in general although it tends to taper off after reaching yields of over 1800 kg./ ha.. About 46 % of smallholders attained yields of between 360 to 840 kg. per hectare per year and about 59 % have reasonably good yields of between 852 to 1320 kg./ha./year while about 20 % got very good yields of above 1300 kg./ha./year. However, about 20 % of smallholders achieved very low yield levels of below 840 kg/ha/year. These are smallholders replanted their holdings either in the 1950s or 1960s. In addition, about 3 % of smallholders achieved relatively high yields of above 1800 kg./ha. Note that the average

yield of the survey area was about 946 kg./ha. which is quite low compared to the national average of 1400 kg./ha. (RISDA: 1977)

TABLE 7.10: Yield Profile of Smallholders Before Replanting

(kg. / ha. / year)

Yield Profile	No. of S/H	%
< 131	13	14.9
132 - 180	22	25.3
181 - 240	9	10.3
241 - 300	10	11.5
301 - 360	14	16.1
361 - 420	10	11.5
421 - 480	9	10.3
Total	87	100.0

Table 7.12 shows yield per hectare and total productive capacity of the survey area before and after replanting. Before replanting average yield was about 260 kg./ha. which is considered very low. At this yield level and with a total land holding of 201.5 ha. which was not replanted gave a total production capacity of about 52,390 kg./year. However, when replanting was undertaken, there was a dramatic increase in yield and total productivity. Average yields per year increased more than 260 % to about 946 kg./ha. At this yield level, when multiplied to about 135 hectares of matured rubber holdings increased total production to about 127,332 kg./year, an increase of over 143 %. Note that only about 57 hectares or 25 % of the total area was still not replanted until

1986. Although from the national point of view, this rate is considered small, from the analysis it is obvious that replanting has indeed increased yield on a per unit area dramatically and subsequently total production of the replanted area.

TABLE 7.11: Yield Profile of Smallholders After Replanting

(kg. / ha. / year)

Yield Profile	No. of S/H	%
< 360	7	8.0
361 - 600	10	11.5
601 - 840	23	26.4
841 - 1080	15	17.2
1081 - 1320	13	14.9
1321 - 1560	13	14.9
1561 - 1800	3	3.4
> 1801	87	100.0

Note : Average yield = 946 kg. / ha. / year

Table 7.13 shows the price trend for different types of rubber produced by the smallholders during the survey period. Although yield on a per hectare basis was one of the important variables in determining income levels of smallholders, it is by no means the most important. Equally significant is the price of the commodity. In 1986 the average price fetched by rubber (all types) was only M$1.25 which was very low compared to the early 1980s. Note that unsmoked sheet (USS) and dried latex fetched the highest prices as indicated by the smallholders.

TABLE 7.12: Rubber Prod. and Yield Before and After Replanting

(kg. / ha. / year)

Status	Yield	Tot. Ha.	Tot. Prod.	% increase
Before Replant	260.0	201.5*	52,390	-
After Replant	946.0	134.6**	127,332	143.0

Note: * = Total area (228.6) - idle ha. (27.1) = 201.5 ha.

** = Tot. area replanted (171.6)-Tot. immature(37) = 134.6 ha

Derivation of yield before and after replanting:

- Before Replant=1.46 kg/ha/day x 14.8 days x 12 mt.= 259.5 kg/ha/yr
- After Replant= 5.33 kg/ha/day x 14.8 days x 12 mt.= 946 kg/ha/yr.

TABLE 7.13: Profile of Average Price of Rubber, September 1986

Type of Rubber Sold	No. of S/H	%	Average Price($/kg)
Unsmoked Sheet(USS)	54	62.1	1.60
Cuplump	21	24.1	0.94
Latex(Dried)	11	12.6	1.71
Scrap	1	1.1	0.75
Total	87	100.0	-
Average Price(all types)			1.25

Income Position of Smallholders

After considering the factors affecting the yield of smallholders in the survey area, we will now analyse the income position of smallholders.

In determining the income levels of the smallholders in the survey area, it is pertinent to note that although rubber cultivation was the predominant occupation, it was not the only one.

TABLE 7.14: Category of Occupation of Smallholders

Category	No. of S/H	%
Solely Rubber	21	24.1
Rubber Plus One Other Job	43	49.4
Rubber Plus Two Other Jobs	23	26.4
Total	87	100.0

This is probably due to the fact that cultivating rubber on an individual and small basis is not viable to sustain the smallholders and hence they have to resort to other activities to supplement their income. This situation is similar to the padi areas of Krian. Table 7.14 shows that only about 24 % of respondents relied solely on rubber for their livelihood while the rest took up one or more additional jobs. Hence, these smallholders were essentially mixed farmers. However, while this is true, it is not just a question of whether they can earn enough from their rubber holdings. It is also a question of whether they have the time and opportunity to do other things.

Since all respondents have replanted some or all portions of their holdings, we can show the household distribution of income from rubber only so as to get an overall picture whether there was any appreciable increase in their income level. Table 7.15 shows that about 90 % of smallholders earned less than M$300 per month. A further breakdown indicated that more than 60 % earn less than M200 per month.

TABLE 7.15: Distribution of Household Income From Rubber (M$/Month)

Income Category	No. of S/H	%
< 50	10	11.5
51 - 100	18	20.7
101 - 150	20	23.0
151 - 200	19	21.8
201 - 250	7	8.0
251 - 300	4	4.5
301 - 350	2	2.3
351 - 400	5	5.7
> 401	2	2.3
Total	87	100.0

This means that even though yields from replanted rubber have increased more than two-fold, earnings from rubber were still very low and inadequate to push the smallholders above the threshold income of M$300 per month which is considered as the poverty income level. This is mainly due to the small size of land holdings where the average size of replanted holdings was only 1.74 hectares. Hence, it is not surprising that a great proportion of smallholders pursue other activites to boost their income levels.

Table 7.16 lists the others sources of income which accrue to the smallholders in the survey area. Between 5 % to 32 % of smallholders received income from other sources. Replanted rubber only accounted for an average income per month of M$161.00 while for other agriculture it was M$230 and M$218 for government jobs and others accounted for M200.00 per month.

TABLE 7.16: Profile of All Sources of Income of Smallholders

Sources	No. of S/H	%	Ave. Income(M$/mt)
Replanted Rubber	87	100	161.00
Unreplanted Rubber	14	16.1	35.00
Children Remittance	28	32.2	60.71
Other Agriculture	23	26.4	230.43
Govt. Employee	4	4.6	218.75
Others	21	24.1	200.95

Table 7.17 shows the expenditure pattern of smallholders in purchasing durable goods and making other expensive social and religious expenditures before and after replanting. What emerges from the above analysis is that it is possible that smallholders income position might have improved after replanting in order for them to incur these expenditures. From Table 7.17 we can see that after replanting, a greater percentage of smallholders managed to purchase television sets (57.4 %), motorcycle (42.5 %) and renovate their houses (10.3 %).

TABLE 7.17: Expenditures By S/H Before and After Replanting

Item	Before Replant(%)	After Replant(%)	No. of S/H
T.V.	31.0	57.4	87
Radio	60.9	12.6	87
Motorcycle	24.1	42.5	87
Motorcar	3.4	3.4	87
Pilgrimage(Haj)	14.9	12.6	87
Renovate Home	2.3	10.3	87

TABLE 7.18: Average Expenditure Pattern of S/H, (M$ per month)

Item	Amount(M$)	%
Food	200	55.7
Schooling	64	17.8
Transport	45	12.5
Utilities	17	4.7
Cigarettes	33	9.2
Total	359	100.0

The average expenditure pattern of smallholders in the survey is shown in Table 7.18. Note that total expenditure exceeded the poverty income level of M$300 per month. Food took up the greatest proportion of the budget with schooling coming second. The above expenditure pattern could also imply that smallholders are indebted to the middlemen who also supply their daily food requirements. Hence, with such low income earning capacity and high expenditures there is hardly any opportunity for smallholders to have surpluses for savings and in fact there is a high degree of dissaving.

TABLE 7.19: Saving Habits Among S/H After Replanting

Response	No. of S/H	%
Yes	55	63.2
No	32	36.8
Total	87	100.0

Despite the budget figures as laid out in Table 7.18, about 63 % of smallholders claimed that they do keep some form of savings.

However, we believe that if the smallholders did indeed save, the amount is negligible.

TABLE 7.20: Production Loans Among Smallholders

Response	No. of S/H	%
Yes	33	37.9
No	54	62.1
Total	87	100.0

Table 7.20 shows that about 38 % of smallholders borrowed from RISDA and the Agricultural Bank to supplement the replanting grants. This shows that only one-quarter of smallholders bothered to make the extra effort to make end financing for replanting work. For the rest it is most likely that they are contented with whatever grant they have and to make the best use of it. We may perhaps deduce that this minority group are the more progressive ones. If this is true then the figure is surprisingly quite high.

Summary

From the above discussion, it is clear that most smallholders have replanted at least once while some have replanted more than once. However, there were still many hectares which have not undergone even a first round of replanting. Although replanting has been accepted by smallholders to be important in improving their yield, most of the replanted areas were still very small and hence, the income that smallholders received from replanted rubber was still low. We have analysed and tabulated additional information on

income profile, savings, expenditure pattern, etc. to show that the income levels of smallholders were very low. This meant that the policy of replanting pursued by the government has not been successful in eradicating poverty among smallholders. Hence, this confirms the observation that replanting per se is inadequate to help eliminate poverty. On the other hand, if replanting were not undertaken, the income position of the smallholders might have been worse off. To overcome this problem, it has been necessary for smallholders to rely on off-farm income activities to boost their income level. In fact RISDA has acknowledged that based on present land holding pattern in the country, rubber alone is insufficient to guarantee smallholders a return commensurate with their effort.

5.0 ATTITUDE OF SMALLHOLDERS TOWARDS REPLANTING GRANTS

Introduction

After analysing the contribution of replanting grants to productivity, income and profitability of rubber production, we shall analyse the attitudes and perception of smallholders towards replanting grants. Attitudes and perceptions of smallholders determine the mode of action that is forthcoming from them. If smallholders perceived replanting grants as being able to assist them to improve their productivity and income position from rubber then this might have a great impact on success or failure of the replanting programme itself. However, if smallholders were to perceive replanting grants as a handout to be spent on consumption instead of concentrating on making the replanted acreage successful, then its effect on increasing output may bound to be affected. In this section, we shall tabulate and analyse the result of the survey on following aspects :-

a) perception of smallholder concerning replanting grant
b) perception on whether replanting grant is adequate
c) perception on administration of replanting scheme
d) perception on problems of replanting
e) factors which persuade smallholders to replant
f) whether abuses were present in the grant system

Table 7.21 shows that about 98 % of smallholders perceived replanting to be beneficial. On the form of benefit that they perceived, Table 7.22 shows that about 60 % believed that through replanting, they would be able to improve their income position while 28 % believed that their output would increase. Hence, the

smallholders positively believed that if they replanted their old rubber they would be able to reap the benefits in the form of better yields and improved income. This is the psychological barrier which needs to be overcome before a smallholder would want to undertake replanting.

TABLE 7.21: Perception of S/H Whether Replanting Is Beneficial

Perception	No. of S/H	%
Beneficial	86	98.1
Not beneficial	1	1.1
Total	87	100.0

TABLE 7.22: Perception of S/H Why Replanting Is Beneficial

Perception	No. of S/H	%
Improve Yield	24	27.6
Improve Income	52	59.8
Others	11	12.6
Total	87	100.0

TABLE 7.23: Whe. Materials Issued to S/H Under Replant Scheme Good

Material	Satisfactory	Unsatisfactory	Total
	..... in percentage		
Seedlings	77.0	23.0	100
Fertiliser	90.8	9.2	100

Since replanting assistance came in the form of material and cash, smallholders were asked about the quality of the material

assistance given by RISDA. Table 7.23 shows that more than 77 % of smallholders were satisfied with the clones provided by RISDA while about 91 % were happy with the quality of fertiliser supplied by RISDA. In the course of the survey, we discovered that some smallholders were not happy with clones provided by RISDA contractors because they were of not of the clone type as recommended but other cheaper types.

TABLE 7.24: Whether S/H Would Replant if Grant Were Reduced

Decision	By 50 %		By 100 %	
	No.	%	No.	%
Continue	63	72.4	7	8.0
Discontinue	24	27.6	80	91.9
Total	87	100.0	87	100

Smallholders were asked a hypothetical question as to what their reaction would be towards replanting if replanting grants were to be reduced by 50 % and 100 % of present rates. The reaction of smallholders is important in so far as we are able to know the shape of their response curve towards subsidies. The result is quite interesting. For example, in Table 7.24, about 72 % of smallholders said that they would continue to replant their holdings if replanting grants were reduced by 50 % while the rest would not replant. This means that most smallholders do not rely absolutely on subsidies in order to replant. Apparently, the smallholders who answered in the affirmative had relatively bigger holdings or had other alternative sources of income while those who answered in the

negative were either those with very small holdings or relied mainly on rubber as the only source of income. However, if the replanting grant were to be reduced by 100 % of present rates, meaning that there would not be any replanting assistance at all, only 9 % of smallholders would continue to replant on their own and the rest would not replant at all. Out of this number who would agree to continue replanting, most are relatively well-off smallholders and had the largest landholding. However, although this is so, only about 54 % of smallholders believe that they will live a hard life without replanting assistance from the government as Table 7.34 shows. In fact the response to the question is informative because replanting grant is just an enabling factor for smallholders to undertake replanting. It is by no means the only factor because the relative size of holding and no loss of income are other factors that will influence smallholders to undertake replanting.

TABLE 7.25: Whether Current Rate of Replanting Grant Reasonable

Response	No. of S/H	%
Reasonable	81	93.1
Unreasonable	6	6.9
Total	87	100.0

Table 7.25 shows that about 93 % of smallholders said that the amount of replanting grant which they received at the time of replanting was adequate. Only about 7 % said that it was inadequate. Although replanting grants do not cover the full cost of replanting, smallholders were on the whole satisfied with the assistance given.

TABLE 7.26: Whether S/H Satisfied with the Way RISDA Administers the Replanting Programme

Response	No. of S/H	%
Happy	83	95.4
Not happy	4	4.6
Total	87	100.0

Table 7.26 shows that more than 95 % of smallholders were happy with the way RISDA administered the rubber replanting programme. Those who said that they were not happy were those whose grants were withdrawn or whose application for additional assistance were not approved.

TABLE 7.27: Whether Smallholders Faced Problems During Replanting

Response	No. of S/H	%
Problem	32	36.8
No Problem	55	63.2
Total	87	100.0

TABLE 7.28: Problems Faced By Smallholder During Replanting

Problem	No. of S/H	%
Wild Animals	13	40.6
No Own Capital	5	15.6
Late Inspection	3	9.4
No Fencing	7	21.9
Others	4	12.5
Total	32	100.0

Table 7.27 shows that about 63 % of smallholders did not face any major problem during replanting. About 37 % faced some major problems during the replanting stage. Table 7.28 lists some of these problems. For those who complained, about 41 % had their young trees destroyed by wild boars while about 22 % had their young trees eaten by domestic animals because there were no fencing around their land. Others faced problems like inadequate capital, late inspection by RISDA officials, etc.

TABLE 7.29: Reasons Smallholders Replanted Their Trees

Reasons	No. of S/H	%
Trees Old & Poor Yield	63	72.4
Friends Persuade	17	19.5
No loss of Income	7	8.0
Total	87	100.0

Table 7.29 list some of the factors which persuaded smallholders to replant their holdings. About 72 % said that they replanted because their trees were old and they were not getting good yields. About 20 % of smallholders said that persuasion of friends was important in influencing them to replant. About 8 % of smallholders said they undertook replanting because there was no immediate loss of earnings because they had other other plots of land to tap rubber or had alternative sources of income. It is important to note in this respect that the replanting grant is an important source of income, however temporary it might be. Most smallholders got cash balances of between 60 to 80 % of the total

grant as shown in Chapter 6.

TABLE 7.30: Nature of Assistance S/Hs Received From RISDA (in %)

Assistance	Received	Not Received	Total
Replanting Grant	100	-	100
SEPENTAS	31.0	69.0	100
Fertiliser Subsidy	18.4	81.6	100
Ethrel Subsidy	45.0	55.0	100
Other Subsidies	40.0	60.0	100

Table 7.30 shows that of all the forms of assistance that is available to smallholders from RISDA, the replanting grant is the most universal. All the 87 respondents received replanting grants. However, for the other forms of assistance, only a few smallholders either bothered to apply or were successful in their application. For example, only 18 % of smallholders received fertiliser subsidy for their mature trees. This also showed that smallholders in general did not apply any fertiliser to their mature holdings.

TABLE 7.31: Cases of Abuse In Administration of Replanting Grant

Cases	No. of S/H	%
S/h Re-Sold Fertiliser	4	28.6
Corruption	7	50.0
Cheating By S/H	3	21.4
Total	14	100.0

Table 7.31 shows that about 16 % of smallholders believed that abuses did occur in the administration of the replanting programme while more than 50 % said that corruption was the main form of abuse. This referred to the unethical practices of RISDA officers in their dealings with smallholders, contractors and tenderers. Other instances of abuse alleged included the reselling of free fertilisers by the farmers or cheating by smallholders themselves. But the fact that only 16 % of smallholders suspected of the occurrence of malpractice and abuse indicate that this is not a very common or serious matter.

Summary

On the issue of whether the smallholders thought that the government should continue to sponsor a programme of replanting, all smallholders interviewed unanimously agreed that it should continue. The reason given was that smallholders could not afford to replant without government assistance. All 87 respondents also unanimously agreed that the present format of assistance comprising of materials and cash assistance should be retained in order to ensure the success of the replanting effort.

6.0 SUBSIDY MENTALITY OF RUBBER SMALLHOLDERS

Introduction

The issue of " subsidy mentality " is interesting in the context of Malaysian agriculture. It has become a sort of household word among smallholders and the farming community because of the constant exhortation and reminders from the community leaders and national leadership that smallholders should not have this kind of attitude. Therefore, in view of this fact, in this survey, we assume that smallholders were implicitly aware of the general meaning of the term " subsidy mentality " by virtue of its common usage. Hence, when the term is mentioned it connotes a state of affairs in which smallholders will not want to or be able to adopt a certain technology or innovation unless subsidies are given by the government.

In this section, we will attempt to solicit the views of smallholders on " subsidy mentality " with the objective of the finding out the following :-

i) smallholders' general attitude on government assistance

ii) whether smallholders exhibit a " subsidy mentality " in the above sense

iii) if so the reasons for exhibiting this kind of attitude

iv) the reasons for the government downplaying this attitude, and

v) how smallholders could resolve the contradiction between having a " subsidy mentality " and being self-reliant or more specifically for how long they should rely on government subsidy.

Although smallholders generally welcomed any form of assistance that would reduce their burden, they believe that subsidies is not a

limiting factor in affecting their work efforts. In this matter it is important to distinguish between the actual contribution of subsidies to farmers' income and their perception and attitudes towards subsidies. It is postulated that even though farmers in general would face economic hardships if subsidies were not available to them, they still believe that they could survive without it.

TABLE 7.32: Whether S/H Can Succeed With Minimal Govt. Assistance

Response	No. of S/H	%
Can Succeed	7	8.0
Cannot Succeed	80	92.0
Total	87	100.0

TABLE 7.33: Whether Self-Reliant Spirit Affected By Subsidies

Response	No. of S/H	%
Affected	2	2.3
Not Affected	85	97.7
Total	87	100.0

Tables 7.32 and 7.33 probe smallholders' response towards subsidies. In Table 7.32, about 93 % of smallholders believed that they cannot succeed in their venture if there were only minimal government assistance in replanting efforts. Here government assistance is a generic term to include all monetary and non-monetary assistance. From this it is clear that smallholders are dependent upon the government for subsidies, credit facilities,

infrastructure, etc. However, although smallholders are generally dependent upon the government for help, Table 7.33 shows that about 98 % of smallholders believed that their spirit of self-reliance would not be affected and that they would work as hard as before. In fact about 98 % indicated that the numerous government assistance programme that they have received tend to make them worked harder because these acted as incentives to them. In addition, smallholders believed that they were morally obliged to work hard because they were using public funds.

Table 7.34 listed a few statements on how " subsidy mentality " could be conceptualised and viewed and smallholders were solicited for their responses. About 90 % agreed that the so-called " subsidy mentality " among smallholders did in fact exist. About 75 % confessed that this occured because of the poverty level of farmers.

TABLE 7.34: Smallholders Views On Subsidy Mentality(SM)(%)

Views	Agree	Disagree	Total
SM Does Exist	90.0	10.0	100
SM Exist Due To Poverty	74.7	25.3	100
Without Subsidy S/H Live Hard Life	54.0	46.0	100
SM Due To Govt. Patronage	59.7	40.2	100
Subsidies To Be Used To Help S/H	90.8	9.2	100
Subsidies No Guarantee S/H Good Life	79.3	20.7	100

Smallholders have no choice but to rely upon the government assistance entirely, and if this is termed as " having a subsidy mentality ", then that is what it is. However, only a slight

majority (54 %) believed that smallholders would not be able to replant and hence would lead a hard life if there were no subsidy at all. As to another possible reason why smallholders have " subsidy mentality ", about 60 % agreed that it was the government's fault because it initiated subsidy programmes and nurtured farmers to rely on a regime of subsidies. Although about 91 % wanted the government to use the instrument of subsidies as liberally as possible to help the smallholders, the government was urged to use it more discriminately on deserving cases only so as to justify its use. Finally, more than 79 % believed that subsidies or replanting grants per se would not ensure the success or failure of the replanting programme, but rather the attitude and hard work and dedication of the farmers themselves. Subsidies are therefore only a necessary but not a sufficient condition for the success of replanting efforts.

About 78 % of smallholders in Perak have heard government leaders applying the term towards farmers in general and felt that this description of the smallholders in general is both unfair and unwaranted. Smallholders gave a variety of responses why the government labelled them as having a " subsidy mentality ". Table 7.35 shows that 64 % believed that the government was frustrated that its subsidy programmes in general was not producing the outcome as expected because many projects failed and subsidies were wasted. Other views ranged from the hope that smallholders should rely less upon government assistance, that the smallholders should realise that the government was facing a financial crisis and the fact that subsidies given were often abused.

TABLE 7.35: S/H Perception Why Govt. Using Term Subsidy Mentality

Perception	No. of S/H	%
Govt. Wants S/H To Be Self-Reliant	17	19.5
Govt. Want To Phase Out Subsidy	3	3.4
Subsidy Given Widely Abused	7	8.0
Subsidy Have Not Improved S/H Output	56	64.4
Don't Know	4	4.6
Total	87	100.0

Table 7.36 gives the various responses of smallholders to the question of how long replanting grants should continue. About 26 % insisted that they have a right to replanting grants and it must be given to all smallholders as long as they planted rubber. Only 8 % were more moderate in their answers by responding that grants should be given only if the government could afford to do so. However, a majority of about 54 % said that replanting grants are in fact contributed partly by the smallholders through the cess payments and hence, they claim that assistance should be extended to the farmers as long as they contributed to the cess payments.

TABLE 7.36: Situation Under Which Smallholders Should Continue To Receive Replanting Grants

Situation	No. of S/H	%
As Long As Cess Imposed	47	54.0
Govt. Financially Stable	7	8.0
Assistance Given Perpetual	23	26.4
Total	87	100.0

Summary

This section attempted to elaborate on the concept of " subsidy mentality " in the context of rubber smallholders in Malaysia by analysing some of their responses to some qualitative questions on certain aspects of subsidies. Although we have not attempted to measure the extent of " subsidy mentality " of smallholders, we have managed to get an overview of smallholders' reaction and perception related to this much abused but vague terminolgy. However, what is quite clear from this analysis is that smallholders in Perak do admit that most of them exhibit the so called " subsidy mentality " in the sense that is commonly understood in Malaysia. Most feel that poverty was the main factor which have forced them to rely upon government subsidy. However, some smallholders feel that in the case of replanting subsidies, it is not a pure subsidy because it also comes directly from the smallholders through the cess tax. Hence, they feel that as long as smallholders were contributing partly to the grant, they are entitled to enjoy its benefit. This reliance therefore could not be construed to mean that smallholders have the " subsidy mentality " in the perjorative sense.

7.0 REGRESSION ANALYSIS OF EFFECT OF REPLANTING SUBSIDIES

In this section, we will supplement the findings from the survey by estimating the output elasticities of replanting subsidies using multiple regression analysis on the following:-

(a) Hectarage replanted response

(b) Yield per hectare response

(c) Total production response

We will attempt to estimate the above by using two alternative models for each, namely the linear-additive model and the log-linear production function model. Cross section data with 87 observations obtained from the survey of rubber smallholders will be used in the analysis. For each function, we shall run a series of regressions and will present the findings of the model which give the most reasonable and significant results. From the estimates, we will draw some policy conclusions with regards to the effectiveness of government subsidy policies in the rubber sector. Below we shall specify the models used and the estimating equations and discuss and interpret the results.

Hectare Replanted Response

It is hypothesised that the hectares that would be replanted in any particular year by smallholders would depend on the following:-

REPHA = F (AGESH, RUBBERP, YIELDHA, HHSIZE, REGRANT, TOTHA, DUMMY)

where

REPHA = Hectares replanted

AGESH = Age of smallholders

RUBBERP = Price of rubber (M$ / kg)

YIELDHA = Yield/ha. (kg / ha)

HHSIZE = Household size

REGRANT = Replanting grant (M$ / ha)

TOTHA = Total land holdings of smallholders (ha)

DUMMY = Land title dummy (where land with title = 1, others =

In this model, it is hypothesised that hectares replanted is a function of 7 independent variables as listed above.

Yield Response

In finding out yield response, we relate the output per hectare of rubber to some of the more important factors of production used within a single year. For this purpose, it is hypothesised as follows:-

YIELDHA = F (REGRANT, REPHA, AGETAP, TAPDAY, TASKSIZ, HHSIZE, REPYEAR, AGESH, WORKEXP, DUMMY1)

where

YIELDHA = Yield per ha (kg. / ha.)

REGRANT = Replanting grant (M$ / ha)

REPHA = Hectares replanted (ha)

AGETAP = Age of rubber tress tapped (years)

TAPDAY = Number of trees per ha. (number)

TASKSIZ = Tapping days per year (number)

REPYEAR = Years trees replanted (actual years)

WORKEXP = Working experience of smallholders (years)

DUMMY1 = Clone dummy (where RRIM 600 clone = 1, others = 0)

In this model, it is hypothesised that yield per hectare depends upon 8 factors as outline above. We have seen in Chapter 6 that replanting grants have been responsible for encouraging smallholders to replant their old and unproductive rubber trees. We also know that trees which were replanted with high yielding clones tend to be more productive than the old trees. Here, what would be of prime interest to us is to see whether replanting grants (REGRANT) is an important variable in explaining yield and also which other factors affect yield. From this information, we would be able to know which variables are more important to manipulate as a policy instrument. For example, if the variable TAPDAY is significant, then we could suggest that the optimum number of trees as recommended by the RRIM or RISDA should be strictly adhered to when smallholders replant their trees.

Total Production Respose

For this function, it is hypothesised that,

GROSSYLD = F (REGRANT, REPHA, RUBBERP, REPYEAR, AGESH, WORKEXP, HHSIZE, DUMMY1)

where,

GROSSYLD = Gross yield per year (kg. / year)

REGRANT = Replanting grant (M$ / ha)

REPHA = Hectares replanted (ha)

RUBBERP = Price of rubber (M$ / kg)

REPYEAR = Year trees replanted (actual year)

AGESH = Age of smallholder (years)

WORKEXP = Working experience of smallholders (years)

HHSIZE = Household size (number)

DUMMY1 = Clone dummy (where RRIM 600 clone = 1, others = 0)

In this model, it is hypothesised that total production of smallholders depend upon 8 variables, namely replanting grants, hectares replanted, price of rubber, year trees are replanted, age of smallholders, working experience of smallholders, household size and the clone dummy.

It is pertinent to clarify at this stage the reason why the variable REGRANT should vary cross-sectionally. At first sight it may seem logical for REGRANT to be same throughout the observations. If so then cross-section analysis of the regression exercise would not be possible because of the problem of multicollinearity. The reason why REGRANT vary cross-sectionally is because replanting rates are different at different period of time as shown in Table 6.10. For example the rates on a per acre basis have changed in 1960, 1974, 1978 and 1981. Since our sample of observation too varies which include smallholders who have replanted at different time periods, hence the rates of REGRANT tend to vary cross-sectionally.

The estimating regression model for all three functions above is of the form specified below:-

1) $Y = a + b1x1 + b1x2 + b3x3 + \ldots\ldots\ldots\ldots + bnxn$

2) $logY = a + logb1x1 + logb2x2 + logb3x3 + \ldots\ldots\ldots + logbnxn$

The results of the regression analysis is given in the Tables 7.37 and 7.38.

8.0 INTERPRETATION OF RESULTS

Hectares Replanted Response

From Table 7.37, it is seen that this model managed to explain about 71% of total variations in the dependent variable. Although 7 variables were regressed, only 3 were statistically significant because they have high T-statistics. The result is interesting when compared with that of Chapter 6. For example, REGRANT had a negative sign and shows that a 10% increase of replanting grant would lead to 4% fall in the hectares replanted. This result contradicts that of Chapter 6 which found a positive correlation between replanting grants and replanted hectares. How can we explain the contradiction? One possible explanation is that the data used in Chapter 6 is of a time series form obtained from official publication. It therefore tends to show a more systematic trend rather than the cross-section data generated from the survey.

TABLE 7.37 : Result of Regression Analysis on Hectares Replanted

Independent Variable	Estimated Coeff.	Std. Error
Constant, (a)	4.1701	1.9209
	(2.1708)	
AGESH, (b1)	-0.0779	0.1886
	(-0.4131)	
RUBBERP, (b2)	-0.0794	0.1487
	(-0.5341)	
YIELDHA, (b3)	-0.0804	0.0821
	(-0.9787)	
HHSIZE, (b4)	-0.0684	0.0783
	(-0.8727)	
REGRANT, (b5)	-0.4135*	0.2010
	(-2.0473)	
TOTHA, (b6)	0.8950+	0.0632
	(14.1406)	
DUMMY, (b7)	-0.6840+	0.0859
	(-7.9606)	
Statistical Test		
R2	0.74	
RBAR2	0.71	

Note : T-Statistics are in paranthesis

+ = significance at 1 %

* = significance at 5 %

Another possible explanation is that other factors may be more important in influencing smallholders in the survey area to replant rather than the amount of replanting grants given. It may also mean that smallholders are less concerned about the actual amount of replanting grants that they receive. In fact, this might be a more plausible explanation. For example, TOTHA, i.e. the total amount of land holding is significant and shows a positive relationship. A 10% increase in TOTHA tend to increase hectarage replanted by 9 %. This means that smallholders in the survey area who have larger holdings tend to replant more because they are able to tide over the transition period when their trees are immature and not productive. The dummy variable shows that it is not necessary that smalholders with land titles would replant more than those without titles. Note that RUBBERP is not significant as an explanatory variable. Hence, although REGRANT is an important variable in influencing smallholders to replant as indicated in Chapter 6 (using national data) the result in Perak shows that REGRANT has a negative effect on replanting. On the other hand, in Perak land holding is a more important factor in influencing the level of replanting.

Yield Response Function

Table 7.38 gives the result of the regression analysis. This model managed to explain about 32% of total variation in the dependent variable after considering the adjusted R2. This means that there are many other explanatory variables not included in the model. For example factors like soil type, tapping system,

7.38 : Result of Regression Analysis on Yield and Production

Independent Variable	Model 1 Coeff.	S.E.	Model 2 Coeff.	S.E.
Constant, (a)	-14.6563 (-2.2746)	6.4434	9.1015 (2.6438)	3.4425
REGRANT, (b1)	-0.2741 (-0.5443)	0.5036	-0.8226+ (-1.5367)	0.5353
REPHA, (b2)	-0.1403* (-1.8490)	0.0758	0.8844# (10.6063)	0.0833
RUBBERP, (b3)	-0.6534# (-3.8746)	0.1686	-0.7262# (-3.8931)	0.1865
AGETAP, (b4)	0.3941# (3.6077)	0.1092	-	-
TAPDAY, (b5)	0.9887# (2.6352)	0.3751	-	-
TASKSIZE, (b6)	0.2417 (1.2254)	0.1972	-	-
REPYEAR, (b7)	3.8246# (2.5070)	1.5255	0.9974 (0.7338)	1.3591
HHSIZE, (b8)	-	-	0.0998 (0.9461)	0.1055
AGESH, (b9)	-	-	-0.0179 (-0.0621)	0.2883
WORKEXP, (b10)	0.0711 (0.9393)	0.0757	0.0073 (0.0811)	0.0902
DUMMY1, (b12)	-0.1504+ (-1.3479)	0.1115	-0.1622+ (-1.2985)	0.1249

Statistical Test

R2	0.39	0.67
RBAR2	0.32	0.63

Model 1 = Yield Response; Model 2 = Total Production Response;
T - statistics in paranthesis.

\# = significance at 1%, * = significance at 5%
\+ = significance at 10%

topography, input expenditures, management cost and tapping labour input, among others were not included. Much of these information could not be extracted from the survey either due to oversight in the formulation of the questionnaire or because the smallholders were not able to give the appropriate response because of absence of record keeping. However, based on whatever information was available, 6 out of 8 variables were significant in explaining the yield response of smallholders. Four variables which were significant at the 1% significance level were RUBBERP, AGETAP, TAPDAY and REPYEAR. For example, a 10% increase in the tapping age of trees (AGETAP) would lead to a 4% in yield per hectare. This also means that there would be a greater yield if replanted trees are of tappable age. In Perak, there are about 25% of areas where trees are still immature. Therefore the scope for higher yield when these trees are replanted and reach maturity is high. This fact is reinforced by the coefficient for (REPYEAR) which is also significant at the 1% significance level. A 10% increase in REPYEAR, meaning the sooner trees are replanted after reaching "old age", would lead to a 38% increase in yield. This again strengthens the justification for replanting. It is also important to note that the TAPDAY variable, i.e. number of trees planted per hectare is also significant in explaning yield response. A 10% increase in TAPDAY would lead to a 9% increase in yield. We have seen that for the survey area, the density of planting is still below the optimum level. An apparently strange result is the REPHA variable, i.e. the hectares replanted variable which has a negative sign and which is significant at the 5%

significance level. A 10% increase in hectares replanted would lead to a 1% decrease in yield per hectare. This seems to contradict with the established observation of the positive effect of replanting.

However, the AGETAP and REPYEAR variables described above proved otherwise. One explanation for this seemingly strange result is that initially, i.e. before trees reach maturity, an increase in hectares replanted do indeed reduce yield but this is only a temporary phenomeneon. This means that an increase in hectares replanted would be offset once trees reach tappable age and yield would then rise to between 10% to 40% as shown by the AGETAP and TAPDAY variable. The clone dummy, however, is significant in explaining yield at the 10% significance level. But the correlation between yield and clone type is negative which is quite strange. It is tempting to explain this anomaly by saying that smallholders specified the wrong clone when they replanted. But there is no other explanation. Other variables included in the regression model are not significant in explaining yield. For example, the number of tapping days per year (TASKSIZE) and WORKEXP or work experience variable are not significant variables. But the most significant result as far as we are concerned is the fact that REGRANT variable seems not to have any effect at all on yield. The coefficient for REGRANT besides being insignificant also shows the wrong sign, which is negative.

Total Production Response

This model managed to explain about 63% of total variation in the dependent variable after considering the adjusted R2. Hence, it has a better fit than the previous model discussed above. Only 4

variables out of 8 are highly significant in explaining the total variation in the dependent variable. For example REPHA and RUBBERP is significant at the 1% significance level. A 10% increase in hectares replanted (REPHA) would lead to a 9% increase in total production. This result confirms out observation in the first model on the effects of the REPHA variable. However, the price of rubber, RUBBERP, which is also significant at the 1% significance level again has a negative sign. A 10% increase in the price of rubber would lead to an 7% decline in total production. At first sight this means that smallholders are not responsive to price incentives which seems also to contradict with other empirical studies on the price responsive behaviour of farmers in the underdeveloped countries. However, it should be remembered that rubber is a perennial crop and smallholders act differently. A price increase would enable smallholders to earn the same amount by working less hours while devoting the rest of his time to other more lucrative ventures. However, a more reasonable explanation is that a price increase may have adverse consequences on replanting efforts of smallholders. Because of their desire to benefit from a price increase, smallholders are more likely to postpone their replanting efforts in order to make short term gains in their income level. This finding is also confirmed in Chapter 6 which saw a negative relationship between hectares replanted and the price of rubber. This is in fact a dilemma facing the government in its effort to balance between increasing the welfare and income levels of farmers and increasing the stock of replanted trees in the country. The clone dummy is significant at the 10% significance level and also

negative. Unlike the yield function where REGRANT is not significant, in this model it is significant at the 10% level. However, there is a negative correlation between total production and replanting grants. For example, 10% increase in replanting grants would lead to an 8% decrease in production. One possible explanation is that if the increase in grant is able to stimulate replanting (as seen in Chapter 6) then there would be a temporary halt in current production because trees under replanting would be unproductive. Only after trees mature after 6-7 years would production be continued. This is one explantion for this negative correlation.

Summary

The main objective of the regression analysis has been to find out whether replanting grants (REGRANT) has any effect at all on hectares replanted, yield and total production of smallholders in Perak. From the analysis it is clear that either REGRANT is not important at all or it has a negative effect. We can summarise the findings of the regression analysis below:-

Dependent Variable	Effect of REGRANT
HA. REPLANTED	(-) (S)
YIELD	(-) (NS)
TOTAL PRODUCTION	(-) (S)

Note: (-) = negative; (S) = Significant; (NS) = Not Significant

Hence, replanting grant is not an important variable as far as all the above functions are concerned for Perak. This result is very interesting because almost all the claims relating to the positive effect of replanting grants on smallholders have been proven to the contrary. We do not claim that this result is applicable throughout the country because if it does then it opens up the question of the justification of replanting subsidies.

FINDINGS AND POLICY IMPLICATIONS

The main conclusion of the regression analysis are negative ones. Empirically we cannot establish any statistically significant correlation between replanting grants and yield and that there are negative correlations between replanting subsidies and hectares replanted and total production. The result of the regression analysis therefore fails to support the contention of smallholders in the survey area that replanting grants have been functional to their efforts in replanting. We are not saying that smallholders have not benefited from replanting subsidies but that it has not had the desired effects as far as government objective is concerned. We can thus make the following conclusion from this.

First, that subsidies cannot function well under under conditions obtained in the survey area. This is reflected in the socio-economic profile of the smallholders noted in the analysis.

Second, that attitudes and perception of smallholders towards subsidies may have played some part in contributing to the negative trends.

Third, that the policy of giving replanting subsidies to smallholders have to be reviewed and its implementation made more efficient.

Fourth, the result of this analysis echoes the sentiment of many writers and observers that the strategy to help smallholders through subsidies is bound to fail because it cannot operate efficiently if the institutional and structutral basis under which they work is not changed. Hence, as we have noted in Chapter 6, it is no wonder that after nearly 4 decades, smallholders are generally still in poverty.

However, despite the above conclusions derived from the regression analysis we can also make the following observations based on the analysis in general:

(a) Rubber replanting is imperative in ensuring a sustained, stable and increasing yield provided holdings are well maintained.

(b) The size of land holdings is the most important variable in deciding whether or not smallholders in the survey area would want to replant.

(c) Although an increase in the price of rubber is desirable and beneficial to smallholders in the short term, its long term effect on hindering the rate of replanting might be possible. Therefore, measures

should be taken to balance the ill effects on both the rate of replanting and smallholders' income level.

(d) Although smallholders tend to display the 'subsidy mentality' upon the government, they claim that subsidies were not a limiting factor and that they would continue to replant even though replanting subsidies were not available.

(e) Although the allocative effects of replanting grants were negative or insignificant, its redistributive effect were positive, in the sense that all smallholders who applied for subsidies received the grant. Therefore, unlike padi price subsidies where non-farmers were the ones who benefited most, only smallholders benefited from rubber subsidies.

CHAPTER EIGHT

IMPACT OF SUBSIDIES IN MALAYSIAN AGRICULTURE - EVIDENCE FROM PADI SECTOR - A NATIONAL PERSPECTIVE

1.0 INTRODUCTION

The rice and padi sector in Malaysia is one of the most heavily subsidised sectors in Malaysian agriculture. A host of reasons have been given to justify this action on the part of the government. [1] Our concern in this chapter is to analyse two specific subsidies prevalent in this sector, namely fertiliser subsidy and padi price subsidy. We have selected these two subsidies for analysis because both of them involve huge government expenditures.

TABLE 8.1: Govt. Expenditure On Padi Subsidies, (M$'000), 1979-85.

Year	Fertiliser Sub.	Price Sub.	Total	Tot. Padi Exp.*
1979	51,062	-	51,062	342,000
1980	79,200	88,000	167,200	342,000
1981	122,300	177,000	299,300	342,000
1982	119,300	180,000	299,300	520,000
1983	97,800	175,000	272,800	520,000
1984	73,600	164,000	237,600	520,000
1985	87,100	201,000	288,100	520,000
1986	106,800	219,000	325,800	520,000
1987	80,400	205,000	285,400	NA

Source: World Bank (1988), Review of Rice Industry, p. 11.

* = Allocation for padi exp. estimated from 5 year plan allocation.

This chapter is an economy wide analysis of subsidies in the padi and rice sector in Malaysia. The analysis in this chapter will be complemented in the next chapter by a micro household level study based on farm survey data acquired from Krian District in the state of Perak. Data and information for this chapter are based on secondary sources and acquired from official documents, reports, censuses, published and unpublished studies. We will also give a descriptive analysis of both subsidies involved in this study.

The specific objectives of this chapter are as follows:-

a) an analysis of fertiliser subsidy in Malaysia

b) an analysis of padi price subsidy in Malaysia

c) regression analysis of effect of subsidies

d) policy implications of findings

Objective of Chapter

In the previous two chapters, we have analysed the impact of replanting subsidies in the rubber smallholding sector by assessing its impact on productivity, income and attitudes of smallholders. In this chapter, we will assess the impact of subsidies in the padi and rice sector. The reason why we chose fertiliser subsidy and padi price subsidy is because these two subsidies constitute a significant proportion of current annual recurrent expenditures of the government in the padi sector. In addition, although as many economists argue that subsidies can be justified and should be adopted only as a temporary measure, in practice it is not easy for the government to withdraw it once they are adopted. Subsidies in the padi and rice sector of Malaysia belong to this category. Therefore, since the amount of public funds spent on subsidies

is quite large and it is a permanent feature in Malaysian agriculture, there is a great need for planners, policy-makers and scholars to make an evaluation and independent assessment of the effectiveness of subsidy policies in the padi and rice sectors. As more information and knowledge are generated and made accessible to government from impact studies on subsidies, the easier it would be for the government to correctly assess its subsidisation policies. Although this analysis is not complete because of various limitations, it is hoped that it would be of some use to planners and policy-makers in Malaysia.

In this chapter we will attempt to analyse both the allocative and redistributive effects of subsidies using data at the national level. Specifically, we shall concern ourselves with the impact of these subsidies on production, yield and acreage response of farmers. The policy implications arising out of this analysis will then be highlighted.

2.0 FERTILISER SUBSIDY IN MALAYSIA

Introduction

Fertiliser has been acclaimed universally to be one of the most critical inputs in rice cultivation. In Malaysia, farmers have been using organic fertilisers for many decades especially before the introduction of chemical fertilisers after the Second World War. [2] Chemical fertiliser is significant as an input because of the greater yield response of modern high yielding varieties when applied to it. In fact it has been claimed that chemical fertilisers constitute an industrial input par excellence of the Green Revolution. [3]. This unique feature of fertiliser as a yield-increasing input is very important in Malaysia because increases in total output could no longer depend on acreage expansion due to the physical limitations of the land. [4] However, it should be remembered that fertiliser application by itself would not lead to any output increase. It needs other complementary inputs such as good irrigation facilities, high yielding varieties responsive to fertiliser and other inputs related to the so called " seed-water revolution " of the Green Revolution. However, the high costs related to acquiring these complementary inputs have caused many economists to remark that Green Revolution technology is very expensive for Third World countries and that returns from the huge investments made have not been justified on equity and efficiency grounds. [5]

In this section, we shall attempt to do the following :-

a) to trace the evolution of fertiliser subsidy policies in the padi sector of Malaysia

b) to analyse the economics of fertiliser utilisation in the padi sector and the justification of fertiliser subsidy policies

Evolution of Fertiliser Subsidy Policy in Malaysia

Halim has analysed and described fertiliser use pattern in Malaysia during the early years of this century. [6] He observed that fertiliser usage in padi was already in vogue among Malay farmers in the 1920s and 1930s when organic fertilisers were widely applied. However, after the Second World War, the government wanted to encourage farmers to use chemical fertilisers instead of organic fertilisers because of their alleged advantages. And once the government was convinced that chemical fertilisers were superior to organic fertilisers through the numerous fertiliser trials and tests conducted by the Department of Agriculture, it openly recommended farmers to switch to them completely. Hence, in 1951 the first official fertiliser subsidy scheme was introduced by the government in the state of Kelantan where successful tests had been conducted. About 300 tons of fertilisers were distributed free to the farmers. The main objectives of this fertiliser subsidy scheme were threefold. Firstly, it was to instil an attitude of " fertiliser-mindedness " among padi farmers. Secondly, it was to assist farmers with low cash outlays to buy fertilisers and thirdly, it was to encourage the use of fertilisers by other farmers in Kelantan and other states

It was perceived that once the use of chemical fertiliser was familiar to the farmers, the government would withdraw the subsidy. But the actual reason for the withdrawal of this subsidy was because

of the failure of the scheme to achieve its stated objectives. This is in view of the fact that the government at this stage was unlikely to have any specific strategy with regard to agricultural policies and specifically on any long term plan for the use of agricultural pricing policies in colonial Malaysia.

The second stage in the evolution of fertiliser policy in Malaysia coincided with the Second Development Plan of 1961-65. All the states were covered by this policy except Kelantan. Initially the government allocated M$6.1 million for the scheme but reduced it to only M$3.1 million in 1963 due to lack of funds. The rate of subsidy was initially 50% of the market price and gradually reduced by 10% annually until the subsidy was exhausted in 1965. In this scheme, each farmer was given a coupon to buy fertiliser from Farmers' Cooperatives. The scheme was envisaged to cover 350,000 acres at an annual rate of 70,000 acres but actual achievement was well below the original target.

The third stage of fertiliser policy in Malaysia was during 1966-70, the period of the First Malaysia Plan. Fertiliser subsidies were continued to be given at the rate of 30 % of the market price. But this time it was restricted to farmers who worked on land below 5 acres. It was planned that M$10 million would be allocated for the whole 5 years but only M$1.6 million was spent. This indicated that there were problems in the planning and implementation of fertiliser policy in Malaysia. One feasible explanation could be that the price of the fertiliser was too high for the farmers even with the subsidy. This factor could have been the stumbling block to fuller and wider use of fertilisers. Furthermore, by this time new

high yielding varieties were only beginning to be introduced into the country and farmers were actually still planting the traditional rice varieties which do not need to use high dosages of chemical fertilisers and whose yields were not affected by not using them. Hence,in 1971, the fertiliser subsidy scheme was abolished and it affected farmers in double-cropped areas because the farmers apparently did not comply with the recommended rates.

This leads us to the fourth stage in the evolution of fertiliser policy in Malaysia. In the mid-1970s, following the OPEC oil crisis, the price of fertiliser in the international market increased by more than double the 1973 rate. This caused the farmers to face difficulties in procuring fertilisers easily. Hence, in 1974 the government decided to reintroduce the subsidy but this time only urea was subsidised at the rate of 50 %. Farmers were charged a flat price of M$10 per 20 kg. bag (recommended rate of application was 2 bags per acre). However, this scheme only managed to serve 40 % of the farmers' population. The scheme was revoked in 1976 when the price of urea in the international market dropped below M$226 per ton. [7]

The final stage of Malaysian fertiliser policy began in the second planting season of 1979 when the government introduced a 100 % subsidy policy. A number of considerations led the government to introduce this subsidy. One was the high cost of fertiliser input in the total cost of padi production. [8] Secondly, the government was abandoning all new development of high cost irrigation projects and hoped to improve yield not by increasing acreage but through the existing planted acreage to be assisted by

optimum application and utilisation of chemical fertilisers. Many studies gave ample evidence that fertiliser usage by farmers was still low and that much potential still existed through yield-increasing methods. [9] A third factor was the conscious and sincere attempt by the government to help farmers reduce their cost of inputs since most of the farmers were poor and lived below the official poverty line. Under the National Fertiliser Scheme, farmers who fulfilled three conditions are eligible to get free fertilisers. First, they must be tilling the land. Secondly, they must be working land below 2.4 ha. (6 acres) and thirdly, the land worked must be a gazetted padi land. [10]

However, there were some farmers whose application for this subsidy was rejected. This matter should be considered to be a serious problem because of the fact that there are needy and poor farmers who are the intended target group of the scheme failing to get access to free fertiliser. Hence, there is a need to assess the extent of this problem. Among the reasons why farmers have been disqualified from getting free fertilisers and whose application have been rejected inlude one of the following :-

a) farmers whose land were not gazetted for padi or whose land were gazetted for planting padi but instead planted it with something else,

b) absentee landowners who registered an application (instead of the tillers who may be tenants),

c) those who worked land which exceeded 6 acres, and

d) farmers who belonged to the Opposition Party [11]

TABLE 8.2: Fertiliser Subsidy Rates, Peninsular Malaysia, 1962-87

Year	Subsidy Rate(%)
1961	50
1962	40
1963	30
1964	20
1965	10
1966-72	30
1973-78	40
1979-87	100

Source : Mokhtar Tamin (1982); LPN (1986)

Table 8.2 and Statistical Appendix summarise what we have discussed so far. Hence, what started as a policy restricted to a few states was later extended to the whole country. In addition, there were different subsidy rates between different locations of the country. Only in 1974 was the subsidy rate for the whole country standardised at M$10 per bag and in 1979 when fertiliser was provided free to any farmer who could prove that he tilled the land.

TABLE 8.3:Details of Fertiliser Subsidy - Costs & Composition-1979

Type/Qty.	Price / bag	Total Amount(M$)
Urea-2 bags/acre	M$14.40/bag/20kg.	28.80
Compound:4 bags/acre	M$14.60/bag/20kg.	58.40
Ammophos:1 bag/acre	M$6.52/bag/4kg.	6.52
Total cost/acre/ha.	M$93.72(231.58)	-

Source: G.S. Suan (1984), Table 2.1, p. 28

TABLE 8.4: Dist. of Fertiliser Under Subsidy Scheme, PM, '79-'85

Year	No. of Farmers ('000)	Area (ha) ('000)	Type of Fertiliser: Ammophos (Qty)	Ammophos M$m	Urea (Qty)	Urea M$m	Compound (Qty)	Compound M$m	Total (Qty)	Total M$m
'79/80	219	259	3	3	46	26	78	47	127	75
'80/81	416	535	5	7	50	38	99	64	155	109
'81/82	305	378	4	5	51	38	102	57	158	100
2/82	285	365	0.02	2	24	11	47	19	73	31
'83	285	365	0.04	3	46	20	97	37	147	60
'84	283	362	0.02	2	49	19	93	42	146	114
'85	280	362	0.01	0.7	3	1	4	1	8	32

Source: Min. of Public Enterprise (1986), Personal Communication

Note: Quantity in metric tons; M$ in millions

Tables 8.3 and 8.4 highlight the assistance offered by the fertiliser subsidy scheme of 1979. Table 8.3 details out the quantum of assistance given to padi farmers. Each farmer who is qualified and eligible to get assistance from the government acquires an average of 7 bags of free fertiliser of various composition amounting to M$93.72 per acre or M$231.58 per hectare. This is indeed a great saving to farmers in their input costs. On the other hand, Table 8.4 gives the details of the distribution of fertiliser under the free scheme with costing and quantity of fertiliser distributed. It is significant to note that between 1979 and 1985 about M$522.9 million have been spent on this scheme.

Economics of Fertiliser Use

In this section, we shall discuss and analyse the relevant aspects of fertiliser usage and focus on the economics of fertiliser use in padi production.

Taylor reiterated that for padi yield to show its full economic potential, farmers must apply the correct type and appropriate level of fertilisers. [12] The critical dimensions of fertiliser application include the amount and timing of nutrients applied, method of application, and the type of fertiliser applied.
In addition, the amount of fertiliser to be applied would depend, among other things, on the the level of nutrient requirement of the padi variety, the natural fertility level of the soil, the depth of water and the number and timing of cloud-free days during the growing stages of the padi plant.

The above gives in general the technical and botanical requirements of fertiliser application. Some economists believe that padi farmers in Malaysia use relatively substantial amount of fertilisers. For instance, Selvadurai believe that the majority of farmers in double-cropping areas use fertilisers. [13] On the other hand, Taylor is of the opinion that about 90 % of farmers in most double-cropped padi areas used fertiliser. The extent of fertiliser application is said to average about 90 kg. per hectare and this represents 80 % of official recommended rates. According to Taylor, two possible explanation for the relatively heavy fertiliser usage by Malaysian padi farmers compared to farmers in neighbouring countries include, firstly, the more favourable physical irrigation environment of Malaysia and secondly, the favourable fertiliser-padi

price ratio. [14]

As a rule, fertilisers acquired in the open market are generally expensive input items for farmers in LDCs including Malaysia. This is because most kind of fertilisers are imported from abroad with handling, transport distribution and storage costs jacking up the costs. In Malaysia about 60 % of domestic requirement of fertilisers are imported while the rest are produced locally. In addition fertilisers produced locally are relatively more expensive to produce compared with imports. Hence, fertiliser subsidies are necessary to bring down the market price so that farmers can afford to use this vital input in the production process. In addition, fertiliser application is associated with the use of modern padi varieties and modern irrigation technology. Hence, fertiliser consumption is tied to the availability of these complementary inputs which are often very expensive because of the huge investment costs. In fact there is a high correlation between these three complimentary inputs of fertiliser imports, expenditure on irrigation and the adoption of high yielding varieties as Table 8.5 shows.

TABLE 8.5: Irrigation Development Expenditure, Fertiliser Imports & Use of High Yielding Variety - Peninsular Malaysia, 1965-81

Year	Irri.Exp.(M$m)	Fert. Imports(m.t)	HYV(% of ac.)
1965	1.3802	n.a.	11.3
1966	1.5418	n.a.	16.7
1967	2.2629	n.a.	15.2
1968	3.2195	n.a.	19.3
1969	3.609	26,000	23.6
1970	5.1925	41,500	46.8
1971	5.1046	36,000	60.2
1972	13.745	49,500	67.5
1973	17.573	62,000	59.7
1974	17.726	68,000	50.7
1975	18.407	74,000	44.1
1976	18.429	81,000	33.0
1977	18.823	89,000	32.1
1978	23.047	98,000	33.0
1979	22.017	n.a.	32.3
1980	17.290	118,000	43.8
1981	16.992	230,000	38.7

Source: Irrigation exp.= 1965-70 D.C. Taylor, 1971-81 Chamhuri

HYV of Padi = 1965-69 Capule & Herdt, 1970-82 Chamhuri

Fertiliser imports = A. Yunus (1984), p. 48 (urea only)

Fertiliser-Padi Price Ratio

Many economists believe that the fertiliser-product price ratio is important in determining whether farmers would use more or less fertilisers. Using more or less fertiliser as recommended by extension would invariably affect overall yield. A favourable ratio would encourage the consumption of more fertilisers. The ratio in effect defines the amount of rice or padi that would have to be exchanged for one kilogramme of fertiliser. If the product price is relatively more favourable than the fertiliser price, the ratio would be smaller and this would in general tend to encourage more use of fertiliser. This means that the price of fertiliser is relatively cheaper. In fact Taylor attributed the favourable fertiliser-padi price ratio of Malaysia to be one of the factors responsible for the high consumption of fertiliser in Malaysia. [15] Prior to 1979 this ratio would have been less favourable as compared to post-1979 level. Generally, today the ratio is much in favour of fertiliser consumption because of the free fertilisers and also because the padi price is heavily subsidised. In Table 8.6 we derive the fertiliser-padi price ratio for Malaysia and correlate it with yield.

From Table 8.6 it is clear that as the fertiliser-product price ratio becomes more favourable, that is the ratio becomes smaller either due to an increase in padi price or due to a fall in price of fertiliser with padi price remaining constant, there should be a greater use of fertilisers. The enhanced use of fertiliser in the production process normally affects yield per hectare. This is especially true after the national fertiliser policy was introduced

in 1979. The correlation between the fertiliser-product price ratio with yield may give us some clue as to their relationship. [16]

Although price is a very important variable in explaining the demand for fertiliser, it is not the only one determining demand. Other factors of equal significance may include non-pricing factors like personal factors, institutional factors and technology. In this connection, it is important to know the price elasticity of demand of fertiliser in Malaysia. This is because it will give some indication whether subsidies policy is appropriate or not. If the demand for fertiliser is inelastic in the short run (ie. a price increase will not lead to a proportionate decline in the amount demanded), then it raises the question about the justification of subsidies.[17] Hence, the argument for subsidies in the short run would not be as strong as in the longer run since generally it will be more elastic. Secondly, if the demand for fertilisers on smaller and poorer farms is elastic even in the short run, the implication is that it could lead to less productive use of fertiliser resources. Hence, the only way to encourage farmers to continue using fertilisers would be to either give away free fertilisers (100 % subsidy) or give credit facilities to farmers to buy fertilisers. However, the usual classical remedy undertaken by most governments is to grant some sort of subsidy in the short run and remove it in the long run while the actual situation should have been the reverse where subsidies are more appropriate in the long run. According to Tamin, the price elasticity of fertiliser in Malaysia in the 1970s was 0.0535. [18]

TABLE 8.6: Derivation of Fertiliser-Padi Price Ratio

Year	Fertiliser Price	Padi Price	F/P Ratio	Yield
	..... cents / kg			(kg/ha)
1965	20.30	26.45	0.77	2500
1966	20.00	26.45	0.76	2400
1967	18.90	26.45	0.71	2300
1968	19.70	26.45	0.74	2500
1969	23.50	26.45	0.89	2600
1970	20.57	26.45	0.78	2600
1971	18.73	26.45	0.71	2800
1972	18.47	26.45	0.70	2700
1973	24.90	30.58	0.81	2900
1974	48.55	41.50	1.17	3000
1975	46.62	43.00	1.08	2800
1976	32.53	43.00	0.76	3000
1977	34.65	43.00	0.81	2800
1978	33.64	43.00	0.78	2700
1979	37.30	50.00	0.75	3100
1980	48.50	56.50	0.86	3300
1981	61.70	63.00	0.98	3300
1982	39.10	63.00	0.62	3200
1983	31.50	63.00	0.50	3200
1984	31.90	63.00	0.51	3200

Source: Figures from 1964-81 estimated from N. Kamil (1983)

Figures from 1982-84 estimated from Economic Report (1983)

This means that the short-run price elasticity of fertiliser in Malaysia was very small and inelastic. Therefore, according to the above argument, government policy of giving fertiliser subsidy in the short run is not efficient. However, since fertiliser policy in Malaysia has been instituted in various forms since the 1950s and is projected to continue in the foreseeable future, the policy is in fact geared for the long run as well. If this is so, according to the above argument, then fertiliser subsidy is efficient.

3.0 GUARANTEED MINIMUM PRICE

Introduction

The padi price subsidy evolved at about the same time as the fertiliser subsidies. However, the structure and mode of operation of price subsidies is more complicated than fertiliser subsidies. The padi price subsidy originated as the support price which is otherwise known as the Guaranteed Minimum Price (GMP) and has survived and maintained essentially its original features right to this day with a few modifications.

Malaysia has throughout its history been a net importer of rice because domestic supply could not cope with domestic demand. In normal times this situation is considered tolerable. However, during periods of emergencies and national calamities and world food shortages, the food security position of the country may be at stake. Hence, one of the earliest policy objectives of the government was to try to improve the food security position of the country by becoming self-sufficient. However, to implement this

policy there was one major obstacle, namely the question of competition from efficient producers abroad who were able to sell cheap and quality rice. The government therefore had to protect local producers by restricting imports. In addition the government undertook to guarantee a floor price for padi sold by farmers to the government stockpile. [19] This led to the introduction of the GMP in 1949. Hence, the objective of the GMP when it was initially introduced was to protect local producers by ensuring a guaranteed price for their product. If there were no import restrictions, there was a likelihood that the local market would be flooded by cheap imported rice through dumping from abroad.

Technically, the GMP is a subsidy because it assures a price to the farmer which is higher than the world market price. Table 8.7 outlines the historical trend of the GMP. Under the GMP, the government agreees to purchase padi from farmers at a guaranteed or a floor price which is above the world market price and to be delivered at the mill door. [20] Millers are also offered this price when they sell rice to the government provided that they buy padi from farmers at stipulated prices set by the government. Under the GMP, however, only padi that does not contain more than 13 % moisture content, free of dirt, empty grains, husk, straw or other foreign matter and the grains are fully matured will be entitled to get the full guaranteed price. [21] However, most farmers seldom qualify for the full floor price because they cannot fulfill this requirement.[22]

TABLE 8.7: Guaranteed Minimum Price, M$/picul (60.5 kg) of Padi

Year	Long Grain	Medium Grain	Short Grain	Note
1949	15	-	-	GMP
1950/51	14	-	-	GMP
1951/52	15	-	-	GMP
1952/54	17	-	-	GMP
1954/55	12	-	-	GMP
1955/56	14	-	-	GMP
1956/57-1962/63	15	-	-	GMP
1963/64-1972/73	16	-	-	GMP
1973/74	23	21	19	MSP
1974/75	26	24	22	MSP
1975/76-1977/78	28	26	24	MSP
1978/79	30	28	26	MSP
10/1/80	30+(2)	28+(2)	26+(2)	MSP+PPS
16/7/80-present	30+(10)	28+(10)	26+(10)	MSP+PPS

Source : Chamhuri Siwar (1986); Soon-Chee Lee (1982), p. 154

This causes the floor price to be lowered through weight reductions as Table 8.8 shows. Notice that compared with that of Thailand, Malaysia adopts a relatively lenient criterion in allowing for deductions. One explanantion why the deduction rate is not so severe in the case of Malaysia is because of the strength and political leverage of the padi farmers. [23] Another explanation is that the LPN is the " buyer of last resort " and hence it is obliged to buy padi from the farmers even if they were of poor quality.

TABLE 8.8: Comparision of Malaysian and Thailand Rate of Deduction For Moisture Content

Moisture Content	Malaysian Rate (Every 1000 kg)	Thailand Rate (Every 1000 kg)
14 %	-	-
14.1% - 14.5%	10	10
14.6% - 15.0%	10	15
15.1% - 15.5%	20	20
15.6% - 16.0%	20	25
16.0% - 17.0%	40	No Purchase
17.0% - 18.0%	50	No Purchase
18.1% - 19.0%	60	No Purchase
19.1% - 20.0%	70	No Purchase
20.1% - 21.0%	80	No Purchase
21.1% - 22.0%	90	No Purchase
22.1% - 23.0%	105	No Purchase
23.1% - 24.0%	115	No Purchase
24.1% - 25.0%	130	No Purchase
Above 25.0%	Negotiable	No Purchase

Source: Auditor-General (1986), Appendix 4

The GMP is not static as Table 8.7 shows. The government in fact reviews it every year. In fixing the GMP, the government's main consideration is the cost of production and farmers' income position. [24] Since 1949, the GMP has increased by 100 % and is the highest in the world. [25] In 1974, the government decided to grant three categories of prices, namely for long grain, medium

grain and short grain padi. In addition, in 1974 the GMP was slightly altered and is known as the Minimum Support Price (MSP). A higher price was offered to farmers who planted long grain variety while a lower price was offered for the other varieties as seen from the table. Although the GMP / MSP may not change every year, the following factors may influence its rate :-

a) demand for rice in the local market

b) price of imported rice

c) price of padi compared to other crops like rubber, oil palm, etc.

For example, in 1954/55 due to a dramatic fall in the world price of rice because of a glut, the GMP was reduced to M$12 per picul (60.5 kg.). On the other hand, in 1973/74 there was a sharp increase in the GMP (M$19 - M$23 per picul) due to a world shortage of rice. Hence, the GMP is always very sensitive to the world rice price.

How does the GMP mechanism work ? This may be illustrated with the help of simple demand and supply diagrams. In Figure 1(A), DDL and SSL is the demand and supply curve of locally produced rice. Under perfect competition, price is determined at OP where supply equals to demand. OQ quantity is demanded. Now assume that the government introduces GMP above the free market price at OP2. At this price, the quantity supplied is OQ1. However, at this point consumers are willing to buy rice if the price is lowered to OP1. Therefore, the rectangle represented by P2P1C1C2 represents a deficit between what the producers / farmers get and consumers willing to pay.

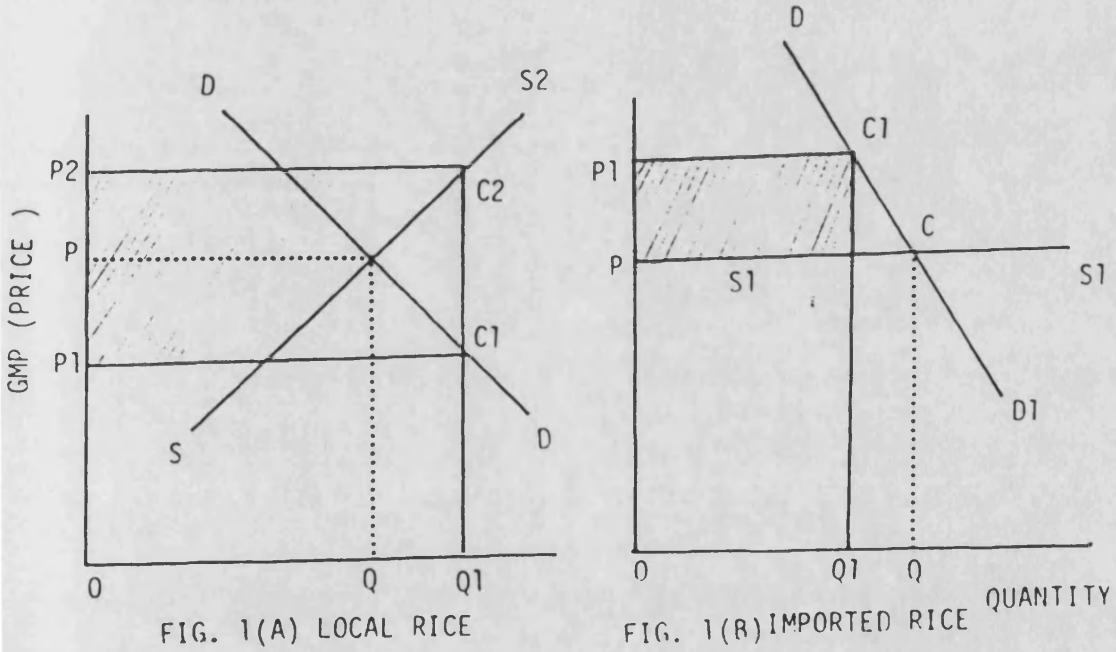


Fig. 8.1: A MODEL SHOWING HOW THE GUARANTEED MINIMUM PRICE WORKS

In order to operate the GMP with least cost to the government and not increase staple food prices to consumers, it is important to know how to make up the deficit above. In Figure 1(B), DDI and SSI are the demand and supply curves for imported rice. Demand for imported higher quality rice is assumed to be inelastic (because imported rice is a luxury item). The supply price is the world price which is not affected by relatively small changes in demand from Malaysia. If there is no government intervention, OP is the market price and OQ1 is the quantity supplied. With the introduction of GMP and import licensing, consumers now must pay higher price for the imported rice at OP1. Consumers demand is OQ1 while the supply price remains unchanged at OP. Hence, the area covered by the rectangle P1C1C2P contributes to the difference between what consumers of imported rice pay and what producers get and represent a surplus needed to finance the deficit in Figure 1 (A). Hence, under the GMP there is an interpersonal income transfer from the relatively well-off consumers to the producers. This in fact represents a tax to the consumers.

The GMP has basically remained unchanged since its inception in 1949. However, it has certain limitations as far as income distribution is concerned. Firstly, farmers rarely deliver padi to the LPN because they prefer to deal with the middlemen. This is because farmers have received credit from middlemen and hence they have to sell their crop to them at prices below the GMP. As a result farmers never receive the full GMP for their crop. Instead the middlemen are reaping some of the benefits themselves. The introduction of price subsidy plus GMP/MSP in 1979 will tend to

worsen the problem of price received by the farmer as we have seen above. [26] In addition, although GMP augments income of farmers, there is a perverse redistributive effect through implicit taxation of rice which constitute major food staple item of population. [27] It should be remembered that the system of GMP could only be self-financing as long as imports continue. This puts the government in a dilemma because its policy of complete self-sufficiency in rice production would mean reducing imports considerably. [28] In the light of this and other considerations, e.g. Malaysia being a relatively high cost producer and who is able to buy cheaper and higher quality rice in the world market, the government made a decision to restrict self-sufficiency to about 50 - 55 % and letting the rest of the demand be met through imports. [29] Hence, the viability of the policy of price subsidy could still be maintained cheaply.

4.0 PADI PRICE SUBSIDY / COUPON SUBSIDY

Introduction

In 1980 in addition to the prevailing GMP, the government introduced a padi price subsidy or the coupon subsidy. Hence, effectively the farmers got a higher price for their product. In addition to getting a GMP of M$466 per ton the farmers are getting an extra M$164 per ton as the price subsidy. One source suggested that the government undertook this policy measure because of an electoral pledge to improve the income position of the farmers. [30] It was felt in many quarters that as the price of padi in the market had been relatively stagnant for many years, it was an

appropriate time to raise the price of padi in 1980 when the financial position of the government was strong. However, the government was concerned that padi price increase would have a chain reaction in the economy and would lead to increase in the prices of other goods and services. This would therefore nullify the padi price increase itself and farmers would not be better off than before. Bearing this in mind, the government decided to introduce a price subsidy which would come from the budget.

The specific objectives of this subsidy are as follows :-

a) to ensure that market price of rice is maintained at the present level for the benefit of the consumers

b) to ensure that farmers receive the full price for padi while at the same time encouraging them to save and invest their extra income

c) to ensure that farmers receive an income level that exceeded the poverty line income of M$300 per month.

Therefore, in January 1980 when the scheme was first announced a price subsidy of M$2.00 per picul (60.5 kg.) was given. In July 1980 it was increased to M$10.00 per picul. This made the effective producer price of padi M$40 - M$60 for every 100 kg. of rice sold. (ie. GMP M$ 30 + M$ 16.54 for long grain)

We shall discuss the following aspects of the price subsidy:-

a) the administration of the subsidy and its problems

b) the extent it achieve its objectives

c) its effect on production

d) its effect on income distribution

Administration of Subsidy Programme

We have noted that the padi price subsidy is the GMP plus a premium which is paid in the form of coupon. These coupons at the rate of M$16.54 per 100 kg. of padi sold can be cashed at stipulated financial institutions. To claim the coupon, farmers may either sell their padi directy to LPN or through their authorised agents. All that the farmers need to do to claim the coupon is to show LPN the official receipt of sales from the purchaser. The receipt normally contains the name and license number of the buyer, net weight of moisture and the price paid. Note that all coupons worth less than M$200 are paid in cash while those in excess of this amount are paid by cheque. However, coupons are not issued for the following:-

a) padi used by farmers for their own consumption
b) padi sold as seeds to Department of Agriculture
c) padi paid as zakat (religious tithe)
d) padi sold to unlicensed traders

On paper the scheme looks tidy and neat. However, the main flaw of this scheme is its less than smooth implementation. We shall discuss some of the administrative problems of the scheme.

First, it is a cumbersome scheme to manage because there are many loopholes and abuses which may occur. For example, the procedures used to pay the subsidy is opened to abuse. Payments are based only on the production of a bill of purchase or a receipt. These receipts could be falsified by the private mills or even by the LPN subsidy clerks. Secondly, private mills could make double sales and claim the excess as subsidies. Thirdly, this system still has to utilise the middlemen to buy padi from farmers who live in

remote areas by granting licenses to them. Because of this they may not benefit fully from the subsidy because the middlemen make deductions for cost of transport, service charges, etc. Furthermore, there are many complaints from the farmers that payments of subsidy are often delayed. Although LPN have introduced the passbook system as a means to register only genuine farmers, this has not been foolproof to prevent abuses from the middlemen. [31] For example, according to the Auditor-General, fraud cases were committed by private millers, farmers and LPN staff. For example, between 1980-85, there were 190 cases involving more than M$2.4 million. Table 8.9 below shows the number of fraud cases brought to court.

Among the control measures that have been suggested to overcome this problem include the investigation of farmers who receive excessive subsidy. As for the private millers, LPN must attempt to compare monthly padi purchased by private millers and coupons issued to them based on the coupon issue statement and to reconcile the difference.

TABLE 8.9: LPN - Summary of Fraud Cases - 1980-85

Party Involved	Number	Value(M$)
Private Millers	99	224,030
Licensed Buyers	13	91,825
Individual Farmers	78	131,554
Total	190	447,409

Source: Auditor-General (1986), Appendix 9

Actually, the main difficulty of overcoming abuses in the present system is due to the difficulty of prosecution because of the absence of specific provisions in the LPN Act. But the most serious problem facing the government is the high cost of administering this scheme. In fact this has all along been the contention of the World Bank regarding the issue of subsidies, that it is generally inefficient and tends to waste resources. Therefore, it is very important to ensure that public money is well spent and that it achieve its objectives. In the next section, we shall try to assess to what extent padi price subsidy has achieved its objectives.

5.0 EFFECTIVENESS OF PADI PRICE SUBSIDY

If we were to scrutinise all the objectives of the subsidy scheme, it would be obvious that it was meant to safeguard the interests of both the consumers and the producers. We have seen that although the government appears to bear the burden of the price subsidy solely through its revenue, the subsidy is in fact financed indirectly through imports of rice and well-off consumers are in fact subsidising the poorer households. It is not actually true that the government bears the full burden of the subsidy. A point that is certainly emphasised by the government through this subsidy is its concern to improve the income and welfare of the producers. In this regard, we shall attempt to find out whether the following objectives have been achieved or not by this subsidy:-

a) whether all farmers did in fact receive the higher price (coupon subsidy) of padi ?

b) whether the intended increase in income through higher padi

prices was able to uplift farmers from the poverty level of M$300 per month ?

c) whether farmers were able to save and invest their perceived extra income presupposing that (b) above was achieved ?

With regard to objective (a) only those farmers who were able to have a good harvest and a considerable market surplus would be able to benefit from the scheme. In this respect, not all farmers benefited equally. In fact there were non-farmers who also benefited greatly from the scheme. Therefore, those farmers who were consistently having good yields in previous years prior to the introduction of the subsidy would be able to benefit more this time round. Therefore, it would still not solve the problem of poor, small and landless farmers who continue to get low returns. It is in fact a case of " the rich getting richer and the poor getting poorer." Some poor farmers do benefit marginally from the scheme as the next Chapter shows through selling the padi which they normally keep for own consumption. (Normally, farmers would allocate a certain proportion of their harvest for own consumption). But with the introduction of this scheme, the farmers perceived that it would be more profitable for them to sell all their padi and to buy rice instead from the open market. However, the disadvantage is that cash income tend to be spent on non-food items. Hence, the increased commercialisation of subsistence farmers tend to make them worse-off than before. Therefore, it would be better for the welfare of the farmers if they were to resist the temptation to get the extra income from selling all their padi but instead to keep some padi for auto-consumption. [32]

Table 8.10 clearly shows the beneficiary of the coupon subsidy from 1981 to 1984. In 1981 about 76 % of farmers received coupons valued at less than M$1000. This constituted about 25% of the value of coupons given out. About 40 % of farmers had received coupons valued at M$200 or less and about 21 % of farmers received coupons valued at between M$200-M$400. This means that fewer farmers receive the bulk of the coupon subsidy. It is commonly believed that bigger and richer farmers who have big surplus of padi to sell in the market are the main beneficiary of the scheme. In addition, middlemen and private millers who buy padi from the farmers and resell them to the LPN reap huge subsidies. In fact between 1st January and 15th July 1981, when the scheme was in its initial stages about 4,508 farmers received subsidy of more than M$2500 each while 43 farmers received subsidy of more than M$4500 each. [33] This cost the government about M$16.2 million. It is doubtful whether those who got the high subsidy payments were small farmers.

On the issue of the contribution of subsidies to eradicating poverty, from available evidence, it is quite clear that despite the presence of subsidies, most farmers are still living in poverty. (see Chapter 5 for an elaboration on the concept of poverty in Malaysia) However, it is true that in general subsidies have been able to improve the income position of the farmers. To prove this point we produce Tables 8.11 and 8.12 and 8.13.

For example, Shand, et. al. compared and contrasted two important rice growing regions in Malaysia, namely the MADA scheme in Kedah and KADA scheme in Kelantan. The former region is a high yielding irrigated area while the latter is a low yielding irrigated

area. Table 8.11 summarises the findings of the study. In MADA, the contribution of subsidies to total household income was 42 % while for KADA it was 49 %. It is significant that although the average monthly income of household in MADA was M$441, which is above the poverty line income, (estimated to be M$300 / month) farmers in KADA earned an average monthly income of M$196, with subsidies contributing nearly half of this figure. Based on this, subsidies did contribute to increasing farmers earnings in KADA but not enough to push them above poverty levels. For MADA, many studies have found that the distribution of income in this region is very inequitable.
[34]

TABLE 8.10: Number of Coupons Distributed & Their Values, '81-84.

Value of	No. of Coupon Distributed				Value of Coupon(M$m)			
Transaction	1981	1982	1983	1984	1981	1982	1983	1984
<M$200	87000	81000	86000	83000	6.4	6.3	6.8	3.9
	(40)	(38)	(38)	(36)	(4)	(4)	(4)	(4)
200-400	46000	45000	51000	54000	15.1	14.7	16.8	17.8
	(21)	(21)	(22)	(24)	(9)	(9)	(10)	(11)
500-1000	34000	34000	38000	40000	24.6	24.1	27.4	28.7
	(16)	(16)	(17)	(18)	(15)	(14)	(16)	(18)
1000-2000	28000	28000	31000	31000	39.1	39.9	43.2	43.5
	(13)	(13)	(13)	(14)	(23)	(23)	(25)	(27)
2000-5000	27000	21000	21000	19000	62.3	64.4	61.5	54.7
	(9)	(10)	(9)	(8)	(36)	(37)	(36)	(34)
5000-10000	3200	3200	2300	1700	22.0	20.5	14.8	10.2
	(2)	(2)	(1)	(1)	(13)	(12)	(9)	(6)
>10,000	300	300	100	80	4.0	3.8	1.7	1.0
	(0.1)	(0.1)	(0.05)	(0.1)	(2.1)	(2.1)	(1.0)	(0.6)

Source: Estimated from Economic Planning Unit (1985), Appendix 3

Figure in paranthesis are percentages

Table 8.12 merely confirmed the findings of Shand, et. al. which found that both fertiliser and price subsidies contributed about 43 % of the annual income of farmers in KADA while padi income stood at about 43 % of farmers total net income. This finding tends to emphasise the significance of subsidies as an income redistribution mechanism. Therefore, if subsidies were to be withdrawn, the income position of farmers would be worse off.

TABLE 8.11: Contribution of Subsidy Towards Income of Farmers

Items	High Yield Irrig. Rice Farm(MADA)	Low Yield Irrig Rice Farm(KADA)
Farm Land (hectares)	1.40	0.9
Yield (tons/ha.)	3.60	2.7
Receipt from Padi (M$466/ton)	4697	2283
Govt. Coupon Subsidy (M$164/ton)	1653	804
Gross Farm Income	6350	3087
Estimated Production Cost	1746	1045
Net Farm Income	4604	2042
Other Non-Farm Income	691	306
Total Household Income	5295	2348
H/H Income Per Month	441	196
H/H Income Per Capita Per Month	86	40
Tot. Sub. (Coupon + Fertiliser)	2213	1164
Tot. Sub. As % of Total H/H Income	42	49
Tot. Sub. As % of Net Farm Income	48	57

Source: R. T. Shand, M. A. Hussein & M. A. Rahman (1982), p. 472

Table 8.13 gives the official government statistics on the the poverty rate of farmers. It shows that poverty rate has fallen from 88 % in 1970 to 54 % in 1983 and is forecast to fall to 30 % in 1990. We can clearly see that the fall in poverty rates in the years mentioned above was accompanied by increasing subsidisation of farmers.

TABLE 8.12: Comp. of Padi Farmers Net Annual Income in MADA, 1982

Source	Amount(M$)	(%)
Net Value of Padi Sale (sales less cost of production)	1,528	42.8
Padi Price Subsidy Received	1,036	29.0
Value of Fertiliser Subsidy Received	513	14.4
Miscellaneous Agricultural Income	85	2.4
Non-Agricultural Cash Income	405	12.4
Total	3,567	100.0

Source: MADA, Muda II Impact Evaluation Survey Series

TABLE 8.13: Poverty Rate Among Farmers, GMP and Price Subsidy

Item/Year	1970	1975	1980	1983	1990(forecast)
Total H/H('000)	140	149	151	139	133
Tot.Poor Padi H/H	123	114	83	75	40
% Poor Padi H/H	88	77	55	54	30
% of Poor H/H	16	14	13	11	8
GMP + Subsidy(%)	16	24-28	28-32	38-40	-

Source: Third Malaysia Plan, Fourth Malaysia Plan, Mid-Term Review of Fourth Malaysia Plan

For example, in 1970 subsidies constituted about 16 % of farmers' income while in 1983 it increased to 40 %. This shows that the fall in poverty was mainly due to subsidies. However, the number of padi households in poverty is still high despite the government's effort to assist this sctor. This reflects the lack of success of strategies to fight poverty. For example, a study undertaken by the

National University of Malaysia in 1986 of 1000 farmers in four areas of Malaysia found that the effect of subsidy on poverty was only marginal. The study concluded that subsidy alone cannot effectively reduce the poverty level so long as a large proportion of farmers' income come from the farm. [35] This means that farmers have to rely on off-farm income for a big proportion of their earnings in order to overcome the problem of poverty in padi farming. [36]

In fact there is a strong case for raising the price subsidy above the 1979 rate. Padi prices have actually been stagnant and lagged behind the general rise in consumer prices. Hence, granting of a price subsidy is simply one method of returning farmers to their earlier earning capacity. In this connection, it is worth mentioning that any transfer payments from the urban to the rural sector is justified provided that a substantial proportion of the payment goes to the target poor group. The problem with the existing subsidies is that unintended beneficiaries are reaping the subsidies and also bigger farmers benefit more than the smaller farmers leading to situation of inequitable income distribution.

Hence, the decline of farmers to a worse off situation is hindered by the provision of subsidies. [37] However, the implications of this are serious. Firstly, there are limits as to the use of subsidy as an instrument because at best it could only remain temporary. Secondly, it implies an ominous and dangerous position for the future welfare of the farmers. Thirdly as to the point whether farmers have been able to save and invest after price subsidies have been introduced, from the above discussion it is

obvious that it would not be possible for this to happen. Table 8.16 shows this.

TABLE 8.14: Price Subsidy - Coupons Issued & Cashed, P. Malaysia

Year	Issuance		Cashed		
	No. Issued	M$('000)	No. Cashed	M$('000)	% Coupon Cashed
1980	958,317	88,071	863,932	83,335	94.6
1981	1,251,511	175,849	1,281,958	173,715	98.8
1982	1,157,238	167,199	1,165,917	173,308	103.7
1983	966,357	172,981	1,053,042	169,131	97.8
1984	901,008	155,958	910,972	170,684	109.4
1985	935,541	195,796	920,787	189,796	96.9

Source: Estimated from data provided by Ministry of Public Enterprise, (1986) Personal Communication. Figures in brackets are percentages.

From Table 8.14, it is clear that almost all the coupons that were claimed by the farmers (or non-farmers) were cashed and virtually nothing was saved or invested. For example, in 1980 about 95 % of the coupons were cashed while in 1985 it rose to about 97 %. In this regard, it is important to remark that the beneficiary of the coupon subsidy have a choice either to cash the coupon or saved it. Hence, we can conclude that padi price subsidies have not been successful in enabling farmers to increase their savings or investment. In reality farmers prefer cash rather than investing their money because they do not have any surplus. Therefore the objective to encourage farmers to save and invest from their " extra

income " from the price subsidy was based on the assumption that the price subsidy was an adequate instrument to improve the income position of the farmers. This assumption is proved to be false and too simplistic.

Production Effect of Price Subsidy

Although the objectives of the padi price subsidy is not concerned primarily with allocative but rather with redistributive issues, it is still important to find out what the production response of farmers have been. This is important because although output increases has not been explicitly stated to be one of the objectives, we can consider it to be an implicit assumption of the government when it introduced this policy. This can be stated because by introducing this subsidy the government would expect the farmers to produce a greater market surplus for sales. A greater market surplus can only be derived from a greater output response from farmers. An empirical answer to this will be attempted in the next chapter but here we shall analyse some of the issues involved by looking at secondary information derived from official statistics and discussing the cost of this policy to the nation.

It is contended that losses incurred by LPN in managing the stockpile and purchasing surpluses from the farmers through the price subsidy programme is a great burden to the nation. The padi price subsidy encourages farmers to sell all their padi instead of retaining and processing some themselves for their own consumption. According to the Auditor-General the padi subsidy scheme encourage farmers to sell wet and dirty padi in view of the gains to be

derived since the payment of subsidy is based on the weight of padi. Hence because of the willingness of LPN to buy all types of padi regardless of quality and payment of subsidy, farmers and middlemen do not bother to safeguard the quality of padi for sale. Hence, LPN buys all the low grade padi to produce low grade rice which is less in demand. Therefore LPN cannot sell this rice and make huge losses. Table 8.15 indicates the losses incurred by LPN in holding low quality rice stocks.

TABLE 8.15: Losses by LPN in Disposing Locally Purchased Rice-'81-84

Year	Sales	Cost of Sales	Prod./Mgnt Cost	Loss
	..... (M$ million)			
1981	163.9	155.6	24.1	15.8
1982	130.4	141.2	43.4	59.0
1983	144.2	160.3	47.2	63.3
1984	121.0	103.1	45.6	23.4

Source: Auditor-General (1986), p. 11

Another way to look at this problem is by comparing domestic production data with that of import data as Table 8.16 attempts to do. From Table 8.16, it is quite clear that despite the existence of the padi price subsidy introduced in 1980, domestic rice production has continued to drop while imports has increased quite rapidly. This is despite the increase in yield as shown in Table 8.6. In fact yield increase could be attributed to the use of high yielding varieties and other technologies associated with the Green Revolution technology. However, since acreage devoted to rice

cultivation have dropped, total production has followed suit. (This meant that total production was sustained in the past through acreage increase). In fact the self-sufficiency level has dropped from a high of 90 % to less than 60 %. In fact according to the World Bank, padi production in Malaysia have been constant since 1974 when the two massive irrigation projects of MADA and KADA were completed. [38] Although padi price subsidy is not the sole factor in determining output growth, its effect on output increase seems to be negligible. This strengthens its role therefore as a redistributive rather than allocative mechanism.

TABLE 8.16 : Rice Imports and Production - P. Malaysia, 1975-84

Year	Prod. of Rice	Import of Rice
	..... metric	
1975	1,107,500	143,903
1976	1,127,820	183,510
1977	1,053,740	283,303
1978	793,230	394,149
1979	1,162,880	300,712
1980	1,139,660	202,865
1981	1,129,651	267,281
1982	1,033,180	391,008
1983	989,530	385,062
1984	958,919	423,935

Source: Tan Soo Hoey (1986), Appendix 2; EPU (1985), Table 4.

6.0 REGRESSION ANALYSIS OF INPUT AND OUTPUT SUBSIDIES

In this section, we shall attempt to estimate the contribution of both fertiliser subsidy and padi price subsidy using multiple regression analysis on :-

a) Total production function

b) Rice yield function.

We shall attempt to estimate the above functions by utilising two alternative models for each function, namely the linear-additive and the log-linear or the familiar Cobb-Douglas model. Time series data for 22 observations, namely from 1965 till 1986 are obtained from official publications. We shall consider both linear and log-linear models in our estimation and see which of the two estimates is more significant in explaining variations in the dependent variable. From the estimates, we shall be able to make some observation as to the effectiveness of the government's subsidy policies. Below we shall discuss the specification of each model and description of its variables.

Total Production Function

The model stipulated takes the form of the following :-

TP = f (TAC, FS, PRICE SUB, YPH, RAIND, IRREXP), where,

TP = Total production (`000 m.tons)

TAC = Total acreage (`000 hectares)

FS = Fertiliser Subsidy (M$/ha.)

PRICE SUB = Price Subsidy ($M/ton)

YPH = Yield per hectare (tons/ha)

RAIND = Rainfall Index (1969 = 100)

IRRIEXP = Total Operating Expenditure on Irrigation (M$ Million)

We hypothesise that aggregate total output of padi depends on six independent variables. The choice of explanatory variables is dictated by the availability and access to data. The independent variables included in the model are total acreage, price subsidy, average yield per ha, rainfall index, total operating and maintenance cost for irrigation facilities and the fertiliser subsidy. In this model, we shall attempt to find out specifically the contribution of price subsidy and fertiliser subsidy in total output. The estimating regression model is specified below :-

i) $Y = A + b1X1 + b2X2 + b3X3 + b4X4 + b5X5 + b6X6$

ii) $\log Y = a + \log b1X1 + \log b2X2 + \log b3X3 + \log b4X4 + \log b5X5 + \log b6X6$

The total production of padi is hypothesised to be a function of aggregate acreage in all seasons. Hence, the greater the area under production the more will total output occur. Hence, the estimated coefficient is expected to have a positive sign. Another possible factor which is likely to influence aggregate output would be the yield variable. The greater the yield per unit area the greater would be overall production. Hence, the expected sign is again positive. However, we are also interested to find out the effect of padi price subsidy on total output. Theoretically, price subsidies may enhance production increase per farm unit but not necessarily in the aggregate. Hence, the expected result is that this variable would be significant in influencing total output. As for fertiliser subsidy, the effect is again expected to be similar to price subsidies. Hence, both these variable are expected to have positive signs. The total expenditure on irrigation should have positive effect on total output while the rainfall index would probably be neutral since this is a double cropped area.

TABLE 8.17 : Result of Regression Analysis on Total Production (Log-Linear Function)

Independent Variable	Coefficient	Std. Error
Constant, (a)	0.4338 (0.7181)	0.6041
Acreage, (b)	0.9473 * (13.2669)	0.0714
Fertiliser Subsidy, (b1)	0.0097 (0.3908)	0.0248
Price Subsidy, (b2)	0.0738 ** (1.9098)	0.0386
Yield, (b3)	0.9458 * (9.7468)	0.0970
Rainfall, (b4)	-0.0678 (-0.7380)	0.0919
Irrigation, (b5)	-0.0198 (-1.6253)	0.0122

* = Significant at 1%

** = Significant at 5%

(T - Statistics are in paranthesis)

R - Squared = 0.98

Adjusted R - Squared = 0.97

DW Stats = 2.64

Table 8.17 gives the result of the regression analysis. This model managed to explain more than 90% of total variation in the dependent variable even after considering the adjusted R-squared. As anticipated, the acreage variable have the expected positive sign and effect on influencing total output. It has a positive sign and the coefficient is highly significant at 1%. A 10% increase in acreage tend to increase total production by 9%. The policy implication of increasing total production is clearly by opening of more land acreage for production. However, the policy option in this direction is definitely restricted since there is an overall constraint in the availability of suitable new areas for padi production. In fact the government has a clear policy of restricting padi production to the so-called granary areas. In addition to being a costly venture, the government has decided in the National Agriculture Policy that the target of rice self-sufficiency should be set around 50-60% only rather than 100%.

As a result of the above fact, additional burden would than have to fall on the other variables to accelerate national production. Yield or productivity-related strategies normally attract the attention of planners in their zeal for greater

production. In this regard the yield coefficient is able to offer some insights because it has a positive sign at the 1% significance level. A 10% increase in yield tend to increase total production by 9%. In fact the emphasis of the government all along have been in adopting strategies especially through research in HYV.

As for subsidy effects, it is noteworthy to observe that price subsidy is quite significant in explaining production increases. A 10% increase in price subsidy would lead to a 1% increase in production. This is the expected incentive effect of the price subsidy in increasing production, although the original intention of the subsidy was for redistributive purposes. Hence, the price subsidy policy would be justified if it were to be sustained. The coefficient for fertiliser subsidy cannot but lead to the conclusion that this subsidy needs its implementation much to be improved so as to achieve its desired objective. But as it stands fertiliser subsidy has not been able to enhance total national production as its original intention warranted. The other variables like rainfall and irrigation have not been able to assist much in the interpretation. Hence, it is clear from this analysis that price subsidy have a positive effect while fertilizer subsidy does not seem to have any effect.

Rice Yield Function

The purpose of this regression is to find out which variables are significant in affecting rice yield and specifically whether subsidies have any influence. The simple model used in the regression stipulates the following :-

YRAS = f (PRICESUB, FS, RAIN, IRR, DUMMY).

where,

YRAS = Rice yield (ton/ha)

PRICESUB= Price subsidy (M $ /Kg)

FS = Fertiliser subsidy (M $ / ha)

RAIN = Rainfall Index (1975 = 100)

IRR = Irrigation Expenditure (M$ m)

DUMMY = Drought dummy where 1977 = 1, other years = 0

We hypothesise that rice yield depends on five independent variables. The choice of explanatory variable is constrained by the availability and access to data. Hence, variables like soil fertility and proportion of high-yielding varieties used have to be excluded although they are important factors in influencing total output because information is not easily available. Moreover, this kind of data are more easily available for cross-section data analysis employed in micro studies. The available time series data include price subsidy, fertiliser subsidy, rainfall, irrigation and the drought dummy.

TABLE 8.18 : Result of Regression Analysis on Rice Yields (Log-Linear Function)

Independent Variable	Coefficient	Std. Error
Constant, (a)	0.6670 (0.5823)	1.1453
Fertiliser Subsidy, (b)	0.0312 (0.6758)	0.0461
Price Subsidy, (b1)	0.2254 * (3.6377)	0.0619
Rainfall, (b2)	- 0.0933 (- 0.4095)	0.2279
Irrigation, (b3)	- 0.0377 (-1.4220)	0.0265
Dummy, (b4)	- 0.1926 * (- 2.5949)	0.0742

* = Significant at 1%

(T - Statistics are in paranthesis)

R - Squared = 0.71

Adjusted R - Squared = 0.62

DW = 1.8

Table 8.18 gives the result of the analysis. Out of five variables, only two are significant in explaining yield. These 5 variables account for 62% of the total variation in the dependent variables. The first significant variable is price subsidy. A 10% increase in price subsidy would lead to a 2% increase in yield. This positive effect of price subsidy is quite consistent when compared to the production function analysis analysed earlier. Another variable which is quite significant is the drought dummy. A prolongation period of drought would lead to a reduction in yield. Fertiliser subsidy is again not able to explain yield increases. Consistent with the earlier analysis on production increase, fertiliser subsidy seems not to have any effect either on yield and hence production. The policy implication is therefore clearly to review the viability of this subsidy although the practical measure of removing or phasing out an existing subsidy would need a highly strong willed political decision. A more moderate and pragmatic effort would be to review the implementation of the fertiliser subsidy.

6.0. SUMMARY AND CONCLUSION

We have seen in the above discussion that farmers in Malaysia are very dependent upon government's assistance. This is especially true in terms of assistance in input and output subsidies. We have attempted to analyse both subsidy types and have come to the following general findings:-

1. The national fertiliser subsidy scheme was introduced in 1979 whereby padi farmers obtained free fertilisers amounting to M$232 per hectare. Each farmer is entitled to get a maximum subsidy equivalent to 2.4 hectares. The government have spent about M$523 million on fertiliser subsidy between 1979 and 1985. It is envisaged that the level of fertiliser utilisation by farmers have increased greatly. However, the results of the regression analysis showed that fertiliser subsidy did not seem to have any positive effect on yield or production increases. Hence, there is a need for the government to review the implementation of this subsidy.

2. Padi price subsidy was introduced in Malaysia since 1946. The main objective of this subsidy is to improve the income position of the farmers without increasing the price of rice to the general population. However, the abuses inherent in the system plus its inequitable distribution tendencies tend to make it ineffective as an income redistribution mechanism. Hence, small farmers only tend to benefit marginally from this subsidy while non-farmers seem to benefit a great deal from it. [38] In addition, although the income position of farmers have improved due to the positive effect of padi price subsidy, the poverty level of farmers is still high. However, the results of the regression analysis showed that padi price subsidy was responsible for effecting yield increases and total production expansion. Hence, the supply response of farmers to price subsidy have been positive.

In the next chapter, we will be able to analyse the effect of both fertiliser subsidy and padi price subsidy more rigorously due to the availability of data obtained from the survey.

NOTES

1. For reasons why padi sector is highly subsidised, see Chapter 5 of the thesis and Zulkifly Hj. Mustapha, Chamhuri Siwar & Nik Hashim N. Mustapha (1986), Food Economy of Malaysia: Problems and Policies in Food Security, Monograph No. 3, Universiti Kebangsaan Malaysia, Bangi.

2. Abdul Halim bin Ismail (1970), Some Economic Aspects of Peasant Agriculture in Malaya, Ph. D. thesis, University of Oxford discussed the history of fertiliser utilisation in padi sector. See p. 144-161

3. R. de Koninck & L. Audet, " Fertilisers For Rice: Who Wins, Who Loses ? A Contribution to the analysis of dependency in Malaysia and Indonesia " in G. B. Hainsworth (ed)(1982), Village Level Modernisation in Southeast Asia: The Political Economy of Rice and Water, Uni. of British Columbia Press, Vancouver & London, p. 208.

4. D. C. Taylor (1981), The Economics of Malaysian Paddy Production and Irrigation, Agricultural Development Council, Bangkok, pp. 77 - 102.

5. For a criticism of the Green Revolution as an expensive technology and tool of manipulation by multinationals to Third World countries for example by using the International Rice Research Institute (IRRI) in the Philippines as an agent of neo-colonialism of transnational companies by making high-yielding varieties dependent on imported fertilisers, see C. Alvarez, " Philippines - Last Days of IRRI? " Inquiry: Magazine of Events and Ideas, Vol. 3 (3), March, 1986, pp. 32 - 33; and Manolo B. Jara, " Green Revolution Making Third World Farmers Poorer " New Straits Times, Business Times, 12 December, 1985

6. A. Halim (1970), ibid,

7. Ministry of Finance, (1976), Economic Report, 1976/77, Government Printers, Kuala Lumpur, p.

8. One estimate had it that fertiliser constitute about 20 % of total cost incurred by farmers. See Selvadurai

9. Prior to 1979, fertiliser usage by padi farmers was well below level expected. For example, 1965/66, percentage farmers using fertilisers in nursery was between 3.7% in Selangor to 86.8% in Kedah/Perlis while those using fertilisers in both nursery and field vary between 38.9 - 46.8% in Selangor and Malacca. See Soon Chee-Lee (1983), Paddy and Rice Marketing in West Malaysia, Ph. D. thesis, University of Leeds, pp. 183-185

10. Lembaga Pertubuhan Peladang (1979), Garis-Garis Panduan Sistem Pesanan dan Pengedaran Baja Sekim Subsidi Baja Padi Kementerian Pertanian, mimeo, Pejabat Konsortium, NAFAS/SPPM/SPPK

11. Officially, all padi farmers (whether Farmer's Association members or not) are entitled to receive fertiliser subsidy. But to implement fully this policy was difficult. For example, in Kelantan in 1982, it was found that in three administrative sub-districts, 115 out of 516 applicants found their fertiliser applications for 1982 off-season rejected on political grounds. See G. Kalshoven, J. R. V. Daane, L. J. Fredericks. F. van Ommeren & A. Tilburg (1984), Paddy Farmers, Irrigation and Agricultural Services in Malaysia: A Case Study of the Kemubu Scheme, Agricultural University Wageningen, Belgium, pp. 120 - 122.

12. D. C. Taylor (1981), ibid., p. 77.

13. S. Selvadurai(1972), Padi Farming in West Malaysia, mimeo, p. 60 - 61.

14. D. C. Taylor (1981), op. cit., p. 80.

15. D. C. Taylor (1981), op. cit., p. 80.

16. D. Dalrymple (1975), Evaluating Fertiliser Subsidies in Developing Countries,USAID, Washington D.C.

17. D. Dalrymple (1975), ibid,

18. For example M. Tamin (1979), " Microeconomic analysis of production behaviour of Malaysian farms: Lessons from Muda ", Food Research Studies, Vol. 17(1), found that the price elasticity of fertiliser in Malaysia was 0.0535.

19. See S. Meyanathan (1979), " Rice Price Control in Malaysia ", Kajian Ekonomi Malaysia, Vol. 16(1/2), June/Dec.

20. Until 1974/75, the domestic price of padi was maintained at a level well above equivalent cif price of imported rice, but since then the difference between domestic and world price was slight. See C. Bell, " Futures of Rice Monoculture in Malaysia ", in P. C. Reining & B. Lenkerd (ed) (1980), Village Viability in Contemporary Society,

21. See Auditor-General (1986), A Comprehensive Audit Report on the National Padi and Rice Authority, Kuala Lumpur p. 7 and S. Selvadurai (1977),Padi Farming in West Malaysia, MOA, Kuala Lumpur.

22. Actual price received by most farmers if the padi is clean is only 13.6% less than the GMP due to deductions for transport, gunny sack, etc. See Soon Chee-Lee (1982), ibid., p. 153.

23. In April 1984, a paper tabled to the LPN Board of Directors to request approval for LPN complexes to refuse to buy poor quality padi was rejected. Instead, it was decided that farmers should be persuaded to produce good quality padi. See Auditor-General (1986), ibid,

24. Abdullah Sanusi Ahmad (1985), " State Intervention and Modes of Public Enterprise Pricing " , Expert Group Meeting, International Centre for Public Enterprise , Pulau Pinang, Malaysia, November 17 - 22, p. 14.

25. However, farmers still wanted an increase in the returns that they get because they claim that cost of production has increased. In fact, the hike in cost of production has somehow been compensated by fertiliser subsidy of 1979. According to the LPN, it feels that the GMP is already high. Based on the cost of production of M$1019.25 per ha. or M$12.90 per picul (Muda) in 1976 and GMP between M$24 - M429 per picul, the GMP is in fact 100% higher than the cost of production. Hence, in 1980 although the GMP was not increased, it introduced the padi price subsidy which is additional cash to the farmers. See Chamhuri Siwar (1986), " Impak dan Implikasi Projek-Projek Membasmi Kemiskinan DiKalangan Petani Padi ", National Padi Conference 1986, Serdang, 20 - 22 January.

26. D. Snodgrass (1981), Inequality and Economic Development in Malaysia, Oxford University Press, Kuala Lumpur, p. 188

27. Goldman (1975), " Staple Food Self-Sufficiency and Distributive Impact of Malaysian Rice Policy ", Food Research Institute Studies, Vol. 14 (3) estimated that low income household devoted about 29% of their budget to purchasing rice between 1957 - 58. He calculated that between 1965 - 72, the price of low quality rice which poorer households consume would be 19% higher than it would have been if imports had been permitted to come in freely at world prices.

28. Level of Self-Sufficiency in Rice Production - Selected Years

Year	S-S(%)
1962	67
1968	77
1971	87
1972	91
1975	95
1978	74
1982	82

Source: Zulkifly, et. al. (1986), ibid., p. 50

29. Ministry of Agriculture (1984), National Agricultural Policy, mimeo.

30. See Fadil Azim Abbas (1978), " Malaysia's Price Subsidy Scheme For Padi Using Coupons " Background paper for INTAN Seminar on Communications, Fraser's Hill, p. 7.

31. See Auditor-General (1986), ibid.

32. A. Rahman Osman," Padi Looking to the Future " in New Straits Times, 8 September 1987 relate that farmers sell all their padi and buy rice. The article also mentioned that government intervention keeps the padi market buoyant and the farmers happy but the cost is high, both to the consumers and government.

33. Auditor-General (1986), op. cit.

34. Sukor Kassim, D. Gibbons & H. Todd (1984), Poor Malays Speak Out, Maricans, Kuala Lumpur; M.I. Said (1985), The Evolution of Large Paddy Farms in the MUDA Area, Kedah: A Study of the Development of Capitalist Farms in Peninsular Malaysia, Centre for Policy Research, Universiti Sains Malaysia, Penang; Lim Teck Ghee (1985), Small and Large Farms in MUDA: A Comparision of Organisation of Production, Yield and Profitability, Centre for Policy Research, Universiti Sains Malaysia, Penang.

35. Chamhuri Siwar (1986), ibid.

36. R. T. Shand (ed) (1986), Off-Farm Employment in the Development of Rural Asia, National Centre for Development Studies, Australian National University, Canberra, Vols. 1 & 2.

37. According to D. S. Gibbons, almost half of the income of rice farmers come from subsidies and inspite of this, the poverty rate is still high. Hence,it would be difficult for the government to reduce or abolish subsidies in this sector. If subsidies were to be removed altogether, a large number of farmers in Muda will stop producing rice. See Halinah Todd (1985), " Switching Padi Land to High Vaue Crops " in New Straits Times, 15 October.

38. World Bank (1981), Considerations for a National Agricultural Policy, p. 7.

39. Azizah Yunus (1986) and G. S. Suan (1986), estimated that the Gini-Index for farmers getting coupon subsidy was skewed towards the bigger and richer farmers.

CHAPTER NINE

IMPACT OF SUBSIDIES IN MALAYSIAN AGRICULTURE - EVIDENCE FROM PADI SECTOR : A MICRO PERSPECTIVE

1.0 INTRODUCTION

This chapter is complementary to the last chapter. Here, we will use primary data from a survey conducted in a padi area in Malaysia to analyse the allocative and redistributive effects of subsidies. We will also analyse farmers' atttitude to subsidies.

Objective of Chapter

The analysis of this chapter will be on the same lines as Chapter 8, except the addition of a section on farmers' attitudes to subsidies which was not possible to do before due to the absence of data. Specifically, we will cover the following aspects :-

a) Socio-economic characteristics of Krian farmers
b) Analysis of padi fertiliser subsidy
c) Analysis of padi price subsidy
d) Analysis of farmers' attitude to subsidies
e) Findings and Conclusions

2.0 CHOICE OF AREA STUDIED

For the survey, we have chosen an area adjacent to the rubber belt of Perak called Krian located in north-west of Peninsular Malaysia. We have chosen this area for the following reasons :-

a) It is one of the oldest and most important rice growing areas in Malaysia,

b) It is one of the seven officially designated rice bowl areas of Malaysia,

c) It was convenient for the author to choose this area because it was in the vicinity where survey on rubber smallholders was held,

d) It is less intensively studied compared to the MUDA and KADA.

Figures 1 and 2 present the location map of the state of Perak and the Krian region. The Krian Irrigation Scheme was completed in 1906 and is one of the oldest in the country. The scheme serves about 24,014 hectares of padi land comprising 22,024 hectares in Krian District and 1,496 hectares in Sg. Acheh in adjoining Province Wellesley in the state of Penang. The original irrigation works were designed for cultivation of a single crop but in 1960 the project was improved to cater for double cropping. However, due to serious technical problems which are yet to be resolved, farmers in Krian are only able to plant three crops in two years rather than than the two-crop per year norm.

In the sample survey, a questionnaire was designed and used to extract the following information :-

a) socio-economic status of farmers

b) details of inputs and output in padi farming

c) details of padi price subsidy

d) attitudes of farmers towards subsidies, and

e) marketing behaviour of farmers.

Fig. 9.1: The Krian Irrigation Scheme of Peninsular Malaysia

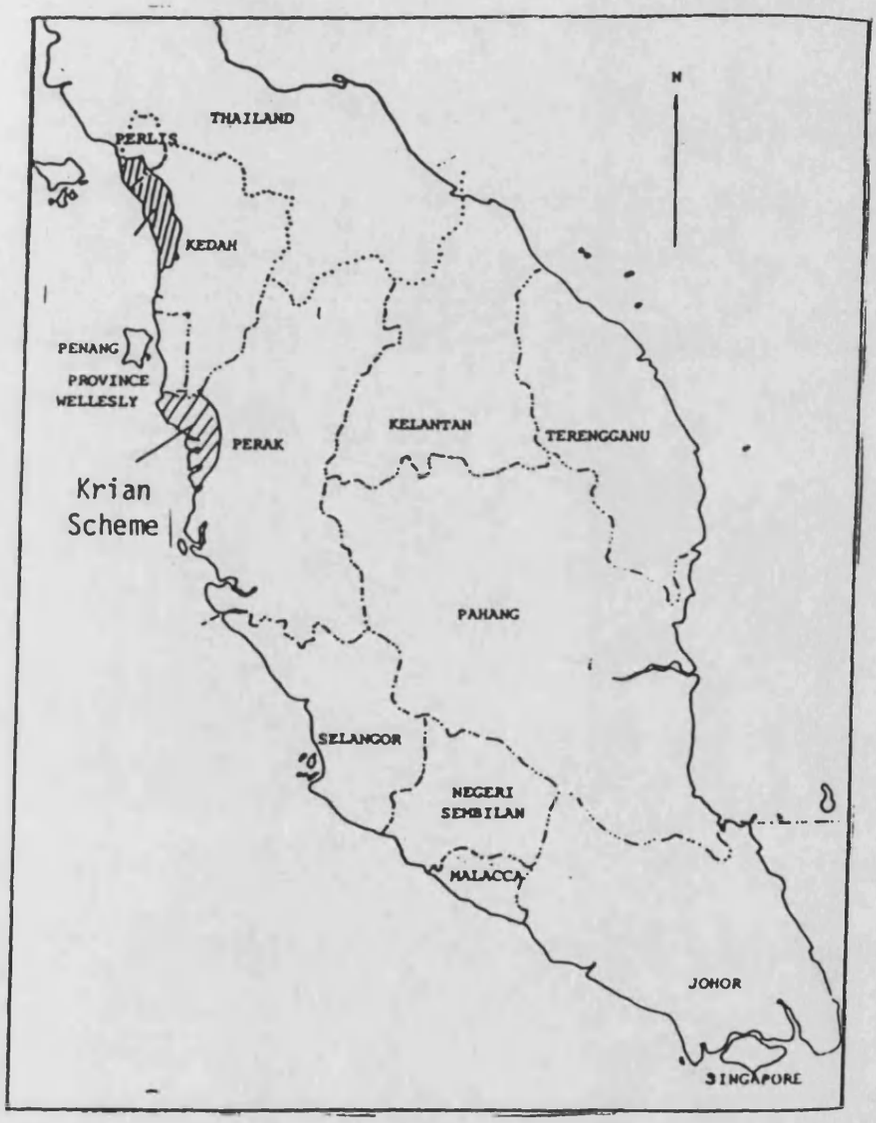
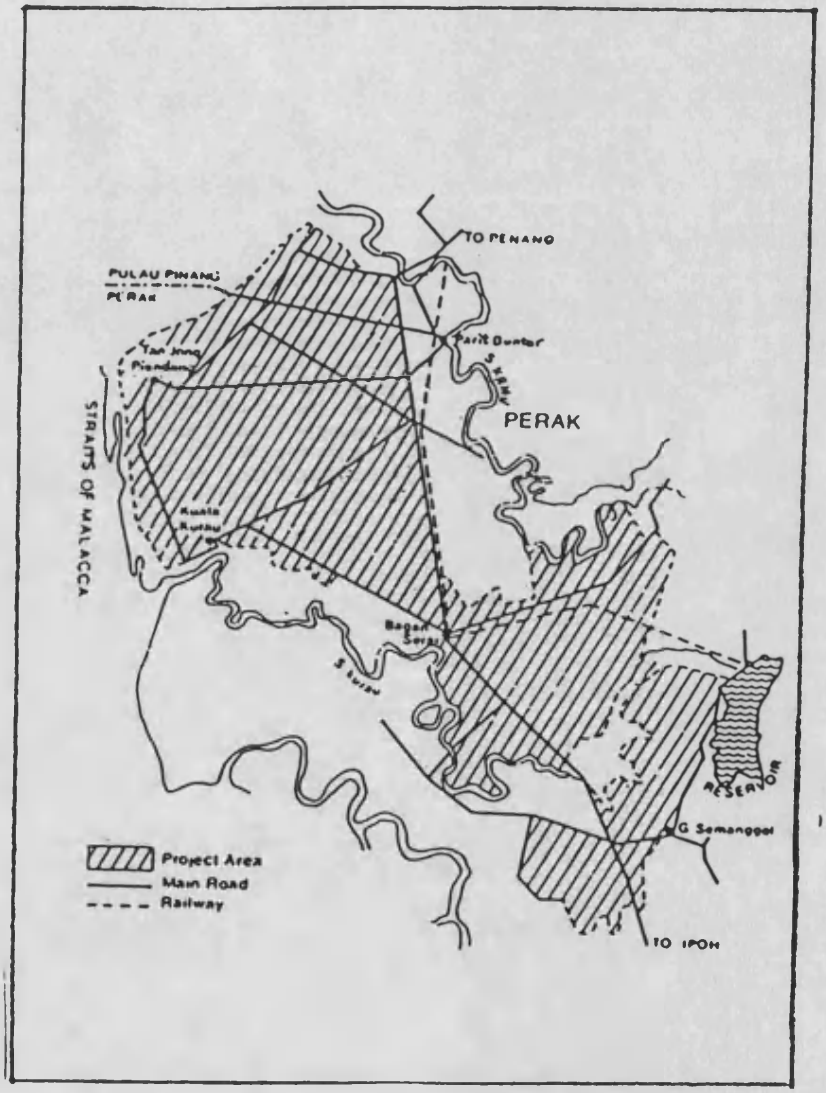


Fig. 9.2: Location Map of Krian Irrigation Scheme



A sample of the questionnaire can be seen in the Appendix. A stratified random sample method was used to choose 75 farmers as respondents. The distribution of respondent farmers can be seen in Table 9.1.

TABLE 9.1: Distribution of Respondents in the Sample Survey, Krian.

Area of FOA (PPK)	No. of Farmers
Parit Buntar	16
Tanjung Piandang	22
Kuala Kurau	22
Bagan Serai	15
Total	75

The Area office of the Farmers' Organisation Authority or Pusat Pertubohan Peladang (PPK) located in Parit Buntar assisted in the locating of farmers and provided various facilities to the author in the course of the survey such as transportation, field assistants, office space, etc. Although 100 farmers were initially identified to be interviewed, only 75 respondents were chosen in four locations. The author personally interviewed all farmers from 8 September till 23 September 1986.

As in the rubber survey, it needs to be stated at the outset that there are many limitations in the data and information generated from the survey. The most serious is the problem of questionnaire design and the reliability of responses given by respondents. Due to these problems, there is a possibility that some of the findings from the study may be inaccurate and give a

distorted view of the actual situation. However, we have tried to minimise this problem by validating the data from other similar studies and getting feedbacks from agricultural officials in the field on farmers' responses. Through this method, we hope that the study would not be a futile activity and thus able to make a positive contribution to the continuing quest to understand how effective subsidy policies have been as well as how farmers behave.

3.0 SOCIO-ECONOMIC FEATURES OF KRIAN FARMERS

In this section, we shall briefly outline the features of Krian farmers while details could be referred from the Statistical Appendix. Appendix Table 1 shows that the age profile of farmers in Krian was middle-aged. For example, more than 72 % of farmers were above 45 years old while about 28 % were above 55 years old. Appendix Table 2 shows that the educational level of farmers were very low. Appendix Table 3 shows that family size was big with 78 % of farmers having between 4 - 9 members. Appendix Table 4 shows that although padi cultivation was a full time job for the majority of farmers in Krian, they also resorted to other jobs to supplement their income. Appendix Table 5 shows that other agriculture and petty jobs constitute more than 60 % of supplementary activities of farmers. Appendix Table 6 shows that the average number of working experience of farmers was 29 years and about 60 % of farmers have cultivated padi between 21 to 40 years. Appendix Table 7 shows that about 96 % of farmers are members of the Area Farmers' Organisation. Appendix Table 8 shows that owner-tenant category constituted about 51 % of landholding followed by pure-tenant and

owner-operator. Appendix Table 9 and 10 shows that most of the land worked in Krian was small averaging about 2.0 ha. in 1986. Appendix Table 11 shows that in the absence of mechanisation, most activities were done manually by family labour.

From this brief account we can note that farmers in this region face many difficulties and constraints which are both physical and institutional in nature and which will affect their level of productivity. For example, although Krian has been a traditionally important granary area, the technical constraints of the region have prevented it from practising full double cropping. Family labour is still the main form of labour although hired labour played an important part during the harvesting period. Another major constraint of this region is the inability to practice mechanisation due to unfavourable soil conditions. Therefore, in view of these factors, we believe that Krian has a limited potential unless the region undergo radical changes in its physical setting and its institutional format. For example, it would be necessary to extensively improve the irrigation structure through major engineering works. In addition, it would be necessary to ensure a favourable land-labour ratio, the planting of two-crops a year instead of three crops in two years, the solution to the problem of aged labour and other structural changes which would attempt to transform this semi-subsistence region to a fully commercialised one. In the absence of these necessary changes, Krian would remain a peripheral and traditional semi-subsistence padi region and henceforth would only play a limited role as a major rice producer in the country.

4.0 EFFECT OF FERTILISER SUBSIDY

Introduction

In the previous chapter we have discussed and analysed the origin of fertiliser policy in Malaysia up to the introduction of the National Fertiliser Scheme in 1979. In this section, we shall discuss and analyse the following :-

a) use of resource inputs in padi cultivation

b) production, yield and profitability of padi cultivation

Use of Resource Inputs in Padi Cultivation

In the production of padi, various inputs need to be utilised and combined to produce an output. Chemical fertilisers applied to padi are just one of many inputs although the natural fertility of the soil is sufficient to produce an output though a small one. However, the use of high yielding varieties and other Green Revolution type of technology plus irrigation facilities necessitate the use of great amounts of chemical fertilisers to enhance crop yield. Therefore, we cannot discuss the effect of fertiliser in isolation but rather the whole input package. However, in the last part of the chapter we will try to isolate the effect of fertiliser on yields through regression analysis.

In this part, we shall tabulate survey findings on resource use in padi cultivation in Krian district. This includes use of conventional but essential inputs like seedlings, fertilisers, insecticides and pesticides, machinery, and labour.

Table 9.2 shows that before 1978 most of the padi varieties used by farmers were of the traditional type where Mat Candu was the

most popular. However, the high yielding variety produced by MARDI (MR series) was the most popular variety used in 1986 (over 56 %). The increased usage of the MR varieties may be attributed to the extension efforts of the Department of Agriculture. It is also interesting to note that some varieties of padi developed by the farmers are quite popular in 1986. For example the variety known as " Sha'ari " which is a product of farmers' own breeding from Kedah constituted about 32 % of usage in Krian. As to sources of supply of seeds, Table 9.3 shows that over 70 % of farmers' seedlings came from their own stocks and purchases.

TABLE 9.2: Distribution of Type of Seedlings Planted, 1978 & 1986

Type of Seeds	1978		1986	
	No.	%	No.	%
Mat Candu	61	81.3	-	-
Mahsuri	6	8.0	-	-
Seraup	4	5.3	-	-
Sha'ari	-	-	24	32.0
MR 77	-	-	30	40.0
MR 55	-	-	5	6.7
MR 52	-	-	4	5.3
Other MR series	-	-	12	16.0
Others TV series	4	5.3	-	-
Total	75	100.0	75	100.0

Tables 9.4 and 9.5 give information on fertiliser utilisation pattern and sources of supply. We have seen in Chapter 8 that padi

farmers in Malaysia used relatively greater amount of fertilisers than their counterparts in other countries in Southeast Asia even before the introduction of the free fertiliser scheme in 1979. Before 1979, fertiliser was only subsidised at 30 % of the market price and farmers had to acquire their supply from authorised retailers including LPP. As a result, more than 90 % of farmers used some proportion of fertiliser. Table 9.4 shows that the average amount spent per hectare on fertilisers before the National Fertiliser Scheme in 1979 was about M$65.00 per ha. but when free fertiliser was made available after 1979, all the farmers claimed to use fertilisers at the recommended rate valued at M$232.00 per ha. Assuming that all the fertilisers given to farmers were utilised, the application rate would be very high indeed and logically, there certainly should have been a marked increase in output. But certainly fertiliser subsidy enabled farmers to have a greater supply of fertiliser. Whether all the fertilisers were used or not is another question.

TABLE 9.3: Sources of Padi Seedlings, 1986

Sources	No	%
Agric. Dept.	4	5.3
Barter	10	13.3
Own stock	36	48.0
Bought	21	28.0
Others	4	5.3
Total	75	100.0

Table 9.6 shows that the majority of farmers in Krian invested a considerable amount to purchase other inputs like pesticides and weedicides. Although the average expenditure on pesticides remained about the same for the two years at M$5.00, weedicide expenditure increased by 42 %, i.e. from M$24.00 in 1978 to M$34.00 in 1986. This was possible because farmers are now able to use their capital to purchase these inputs instead of fertiliser.

TABLE 9.4: Whether Farmers Use Fertilisers & Amount Spent, '78 & '86

Response	1978			1986		
	No.	%	Ave. M$	No.	%	Ave M$
Use	73	97.3	65.00	75	100	232.00
Not use	2	2.7	-	-	-	-
Total	75	100.0	-	75	100	-

TABLE 9.5: Source of Fertiliser Supply 1978 & 1986

Source	1978		1986	
	No.	%	No.	%
100 % subsidy	-	-	75	100
Bought from retailer	75	100	-	-
Total	75	100	75	100

TABLE 9.6: Average Expenditure on Inputs / Ha. 1978 & 1986 (M$)

Year	Fertiliser	Pesticide	Weedicide
1978	65.00	5.00	24.00
1986	232.00	5.00	34.00

TABLE 9.7: Use of Insecticide and Pesticide, 1978 & 1986

Response	1978		1986	
	No.	%	No.	%
Use	68	90.7	71	94.7
Not use	7	9.3	4	5.3
Total	75	100	75	100.0

TABLE 9.8: Use of Machinery to Prepare and Harvest Land, 1986

Response	Prepare land		Harvesting	
	No.	%	No.	%
Use	-	-	-	-
Not use	75	100.0	75	100.0
Total	75	100.0	75	100.0

We have seen that heavy machinery cannot be used in Krian. Table 9.8 confirms this fact. This situation is related to the non-completion of the irrigation scheme which would have enabled the fields to be irrigated all year round instead of being flooded and hence contributing to the deterioration of the land condition. Consequently, the low level of mechanisation of this region has been a detrimental factor to enabling it to become an important rice bowl region in the country vis a vis the other rice producing areas.

Table 9.9 shows the labour use pattern and distribution in Krian in terms of person-days. It can be clearly seen that harvesting took up the bulk of available person-days followed by maintenance work of the fields. Under maintenance work the activities involved are fertilising, weeding and land preparation.

Out of 150 person-days, family labour constituted about 56 % of person-days used followed by hired labour at 34 % and gotong-royong or cooperative labour at 10 %. In total, family labour took up about 56 %, hired labour by 34 % and the rest by only 10 %.

TABLE 9.9: Div. of Usage of Types of Labour, 1986 (in person-days)

Item	Family Lab	Hired Lab	Coop Lab	Person-Days
Land Preparation	20	10	-	30
Nursery Stage	5	-	-	5
Transplanting	10	10	5	25
Fertilising,Weeding & Chemical Spray	30	5	-	35
Harvest & Threshing	10	20	10	45
Winnowing,Cleaning Drying & Storing	10	5	-	15
Total Person-Days	85(56%)	50(34%)	15(10%)	150(100%)
Amount paid / per person day				M$8.44.

Note:

- % contribution of hired labour on an average farm size of 2.5 ha. or less is between 34 - 40 %, but percentage of hired labour increases if farm size also increases. Percentage increases is also marked if padi is not the main occupation of the farmer.
- Total person-days per season per hectare in Krian is comparatively higher than other padi areas, for example Kedah/Perlis due mainly to low level or virtual absence of mechanisation in this area.
- Imputed value of family labour is between M$6 - M$7 / person-day.
- Gotong royong labour (cooperative labour) is considered to have

a similar value, i.e. to cover cost of food and cigarette

- Estimated cost of hired labour is as follows:-

a) for land preparation at M$25 / person-day / ha.

b) for transplanting (for women) at M$12.35 / person-day / ha.

for fertilising and chemical spraying at M$25 / person-day / ha.

d) for weeding (women) at M12.35 / person-day / ha.

e) for harvesting using the the " pawah system " or crop sharing agreement in the ratio of 10 : 2

TABLE 9.10: Component of Labour Cost in Padi Cultivation, 1986

Labour Cost for:	%
Land Preparation	25.06
Bund Repair	4.14
Nursery stage	4.80
Transplanting	20.11
Fertilising & spraying	4.94
Weeding	5.58
Harvesting & Threshing	29.82
Winnowing, Cleaning, Drying & Storing	5.55
Total	100.0

Table 9.10 shows the component of labour cost in padi cultivation in Krian. The purpose of tabulating this result is to arrive at an estimate of the labour costs in Krian by imputing the labour costs of family labour.

Since the level of labour usage in Krian was relatively higher and the use of machinery was negligible, the cost of labour in Krian was relatively higher than in other parts of the country. In addition, the Table also confirmed the trend of labour utilisation that land preparation and harvesting took up the bulk of labour costs which was about 60 % of the total labour costs.

Production, Yields and Profitability Analysis of Padi Cultivation

In this section, we shall analyse the following :-

a) cost of padi production

b) returns from padi production based on productivity and profitability analysis and we shall estimate the following :-

- yield per hectare
- return from farm labour and management
- return from farm labour, management and land
- return to one man-day labour
- yield for each kg. of fertiliser applied
- return for each kg. of fertiliser applied
- return for each M$1.00 expenditure on fertiliser

Table 9.11 shows the budget expenditure figures on a per hectare basis for two time periods, 1978/79 and 1986/87 main planting seasons. For comparative purposes, figures for 1978/79 were derived from Fatimah (1983) while figures for 1986/87 were calculated from the survey results. It is very clear from the Table that although variable and fixed costs for 1986/87 season have increased, net return was still higher at M$822.32 per season/ha mainly because output and price have increased.

TABLE 9.11: Budget Expenditure Per Ha. of Padi Land Cultivated

	1978/79		1986/87	
	Qty.	M$	Qty.	M$
(A) VARIABLE COST				
Prepare land (tractor)	-	123.25	-	-
Seedlings (kg)	21.13	8.88		15.24
Fertiliser (kg)				
- nursery stage	11.14	59.85	16.51	10.00
- growing stage	98.95		154.36	
- mature stage	56.14		101.88	
Pesticide	-	19.11		29.84
Weedicide	-	26.65	-	40.62
Combined Harvester	-	-	-	-
Labour				
- Total man-days	154.35		150.00	
- Wages		125.78		430.50*
(B) FIXED COST				
Land Rental		322.17		315.00
Land tax & irri. rates	-	-	-	10.00
TOTAL COST		685.69		851.20
VALUE OF OUTPUT(kg)	1932	908.04	2595	1673.52
(GROSS INCOME)				
NET RETURN		222.35		822.32
(yield x price)-(A+B)				

* = M$8.44 x 150 man-days x 34 % (hired labour)
Note: 1978/79 figures quoted from Fatimah Arshad (1983)
Note for costs in 1986
1) - There is no marked increase in rental charges on land because system of tenancy is based on kinship relations
- For owner-operated land, the net return or income from padi increase by 38.3 % (M$1673.52 - M$536.20 = M$1137.32), i.e. compared to overall net return of M$822.32
2) Cost of tractor service is nil because of physical character of farmland which is not suitable for tractors.
3) There is a marked increase in the cost of pesticide and weedicide because of the after effects of reliance upon chemical fertilisers. It has been established that fertiliser use have attracted pests.
4) As to labour cost, the number of man-days is almost constant due to lack of mechanisation farming technique in this area. Here the farming technique is still manual and traditional. However, the increase in the cost of hired labour is very great. Greater resort is made by hiring labour on a commercial basis rather than relying on cooperative gotong royong labour.

Note also that fertiliser costs in 1986 have declined tremendously and remained at a token figure of only M$10 while its physical usage in kilogrammes have more than doubled. As to the contribution of fertiliser subsidy in the element of costs, if fertilisers were to be purchased in 1986, then the cost of production would increased by 27 % (i.e. subsidy at M$231.00 per hectare)

TABLE 9.12: Productivity and Output Capability in Padi Prod.(M$)

Items	1978	1982	1986
Return to Farm Lab. & Mgnt.	222.35	939.97	822.32
Return to Farm Lab.,Mgnt & Land	544.42	1287.11	1137.32
Return to 1 Person-Day	2.26	6.98	8.35
Yield to 1 kg. of Fertiliser	11.62	9.72	9.51
Return to 1 kg. of Fertiliser	1.70	3.55	3.05
Return to M$1.00 Fertiliser exp.	4.71	35.13	83.23

Note: 1978 and 1982 figures are taken from F. Arshad (1983)

Productivity Analysis

In this section, we will attempt a productivity analysis to find out whether padi cultivation is profitable or not. Table 9.12 gives the result of the calculation. Note that Table 9.12 is derived and calculated from Table 9.11 and we shall explain how the results have been derived and interpret its results. There are six measures of productivity that are being analysed. For the figures to be meaningful and comprehensible, we have included figures for 1978 and 1982 taken from Fatimah (1983) to be compared with 1986 figures.

Return to Farm Labour and Management

This is derived by deducting gross income from total cost. From the Table it is clear that 1982 had the highest return at M$939.97 while in 1986 it was only M$822.32. Return to farm labour was lowest in 1978 at M$222.35 which meant that padi cultivation was more profitable in 1982 and 1986 compared to 1978.

Return to Farm Labour, Management and Land

This is derived by deducting gross income from total cost plus land rental cost. Here again 1986 figures of M$1137.32 was overridden by 1982 figures of Ml287.11 while 1978 figure stood at M$544.

Return to One Person-Day

This is derived by adding net return to wages and dividing by total person-days worked. It can be observed that return per person-day was highest for 1986 at M$8.35 compared with the two earlier periods.

Yield to One Kilogramme of Fertiliser

This is derived by dividing the value of output (price multilplied by output) by total kilogrammes of fertiliser used. Although the free fertiliser subsidy programme started in 1979, the yield for 1986 of M$9.51 was lowest compared to the two earlier periods. This may not be surprising due to the law of diminishing returns because although fertiliser application was at a high level, marginal returns were low.

Return to One Kilogrammme of Fertiliser

This is derived by adding net return to fertiliser expenditure and dividing by total amount of fertiliser used. For 1986 the figure derived was M$3.05 which was a bit lower than the 1982 figure of M$3.55

Return to M$1 Fertiliser Expenditure

This is derived by adding net return to fertiliser expenditure and divided by fertiliser expenditure. Here is where the return for 1986 was highest compared to the earlier periods where the figure of M$83.23 was nearly three times the figure for 1982.

TABLE 9.13: Yield Per Hectare For Main Season, 1978 and 1986 (kg)

Location	1978	1982	1986
Krian	1932	2650	2595
Malaysia(ave)	2332	2568	-
P. Malaysia(ave)	2393	2617	-

Note: 1978 and 1982 figures are from Fatimah (1983)

From Table 9.13, the average output on a per hectare basis in 1986 in Krian was about 2595 kg. This is still much higher than the 1978 rate although 1982 rate exceeded the 1986 rate. The year 1982 registered a much higher output than 1986 probably because the effects of fertiliser and padi price subsidy introduced in 1979 and 1980 was greatly felt.

Summary

From this discussion we can make the following conclusion:-

a) as to resource use, it is evident that family labour was still the main form of labour used while hired labour was used only during peak times of planting and harvesting

b) padi varieties used were mainly of the HYV type

c) farmers used relatively much fertilisers, pesticides and weedicides

d) fertiliser subsidy was the main factor which enhanced the use of fertilisers among the farmers

e) since mechanisation was not practicable in Krian, this factor was an important constraint in promoting Krian as an important producer of rice in Malaysia in the future

f) despite the existence of subsidies, the returns from padi cultivation was very low. Fertiliser subsidies, however, contributed to a great reduction in input costs of farmers.

g) the various productivity tests suggest that returns to padi cultivation were more favourable compared to pre-subsidy period.

(see Table 9.12)

5.0 EFFECT OF PADI PRICE SUBSIDY

Introduction

We have analysed padi price subsidy at the national level in Malaysia in the previous chapter. In this section, we shall attempt to tabulate and analyse the results of the survey in Krian and see what effects padi price subsidy had with regards to the following :-

a) its effect on farmers' income

b) its effect on market surplus

c) its effect on total output

Effect on Market Surplus

In this part we shall not attempt to cover everything related to marketing of padi but only those parts having a direct bearing upon price subsidy. The following information is pertinent to our discussion.

TABLE 9.14: Choice of Marketing Channel, 1986

Choice	No.	%
Middlemen	9	12.0
LPN	7	9.3
Licensee	51	68.0
Private mills	8	10.7
Total	75	100.0

Table 9.14 shows farmers' choice of marketing their padi. About 68 % of the farmers prefered to sell most of their crop to private licensees, namely the private operators licensed by LPN to act as

buying agents rather than to other buyers. The most often cited reason for this choice was the convenience that it entailed for farmers in terms of making relevant logistic arrangements with the buyers like transportation, advances, etc which were more flexible rather than for better prices. In general the prices offered by private buyers and those offered by the licensees were about the same.

TABLE 9.15: Ave. Price Received By Farmers/100kg. (Long Grain)

Price	1978	1986
	..... M$	
Without subsidy	47.00	47.9
With subsidy	-	65.00

Table 9.15 shows the price of padi in 1978 and 1986. Basically, it was about the same in both years at M$47.00 per 100 kg. However, when the the price subsidy at M$16.54 per 100 kg. was introduced in 1979,it inflated the effective price of padi to about M$65.00 per 100 kg. to the farmers although consumers were shielded from paying the extra amount. Hence, the price subsidy had effectively increased the receipt of farmers by about 37 % although the basic consumer price remained constant. Through this mechanism of price subsidy which was financed through the budget, the government managed to increase the return to farmers while protecting the poorer consumers from having to pay the extra cost. However, there was a great likelihood that richer consumers were subsidised by the government by pursuing this measure.

TABLE 9.16:Effect Of Price Subsidy On Market Surplus, '78 & '86

Effect	1978/79		1986/87	
	Qty.	%	Qty.	%
Total Acreage (Ha)	133.27	-	158.3	-
Yield/Ha.(Kg)	1932	-	2595	-
Auto-Consumed (Kg)	52,800	17.7	36,924	9.3
- Zakat (Kg)	15,510	5.2	2,245	0.6
- Seeds (Kg)	1,610	0.5	700	0.2
- Market Surplus (Kg)	227,400	76.3	357,067	90.1
Total Output	297,960	100	396,096	100
Ave. Deduction/100 Kg	10	-	15	-

Table 9.16 compares the situation before and after subsidy (ie. 1978 versus 1986) with regard to market surplus and other uses of padi. Note that a market surplus could occur under the following circumstances:-

a) if total production were to increase but total consumption remain constant

b) if total production remained constant while total consumption declined, or

c) if total production were to increase but total consumption decline.

In addition, total production could increase either by a rise in yield per hectare or through an increase in planted acreage. In the case of Krian, the total output of padi after subsidy was introduced increased by about 98,136 kg. or by 32.9 %. Also, before subsidy was introduced in 1978, the amount of padi that was sold in

the market was only 227,400 kg. or 76.3 % of total output. However, after subsidy was introduced for six years in 1986, the proportion sold was 90.1 % of total output. In absolute terms market surplus had increased by 129,667 kg. or by 57 %. It is our contention that the increase in market surplus was due to the incentive effect of the padi price subsidy. At the same time, the amount of padi consumed by farm households was considerably reduced in 1986 by 15,876 kg. or by 30 % of the 1978 figures. One likely reason for this was probably to the greater incentive of farmers to sell as much of their output as possible in the market in order to benefit from price subsidies. In addition, farmers would find it more economical to buy rice in the market rather than keep some for their own consumption after price subsidy was introduced. In summary, if the objective of the price subsidy was to increase the quantity of padi marketed then this objective had been achieved to a certain extent when we examined the market surplus effect of subsidies.

Effect on Income

We have seen that the effect of price subsidy on market surplus was quite considerable in the case of Krian. We would now like to discover whether its effect on income was also significant as well since market surpluses and income accruing to farmers should be highly correlated. Here we are concerned to see whether all farmers have benefited equally from the price subsidy scheme or whether only a certain category of farmers have benefited.

TABLE 9.17: Average Income From Padi Farming Per Season, 1986

Item	M$	%
Padi income (No Subsidy)	1945.84	74.4
Coupon Subsidy	669.32	25.6
Total Income	2,615.16	100.0

TABLE 9.18: % Contribution of Coupon Subsidy to Total Padi Income

Percentage	No.	%
21 - 24	7	9.3
25 - 27	65	86.8
28 - 29	3	3.9
Total	75	100.0

Table 9.17 shows on average, that the coupon subsidy contributed about 26 % of total farmers' income from padi. Table 9.18 shows that all farmers have benefited from price subsidy since all of them have sold a portion of their crop in the market and subsequently claimed the coupon subsidies from LPN or its agents. A significant point to note is that about 87 % of farmers said that coupon subsidy contributed about 25 - 27 % of their total income from padi. This meant that if the government were to discontinue with the present system of subsidising farmers' income, then the income of farmers would be affected and the overall rate of poverty among padi farmers would increase.

TABLE 9.19: Distribution of Coupon Subsidy, 1986

Coupon Subsidy(M$)	No.	%
100 - 200	8	10.7
201 - 400	17	22.7
401 - 600	17	22.7
601 - 800	15	20.0
801 - 1000	7	9.3
1001 - 2000	11	14.7
Total	75	100.0

As to the distribution of coupon subsidies, Table 9.19 indicates that about 65 % of farmers have received coupon subsidies amounting to between M$201 to M$800 per season. Since farmers in Krian planted three crops in two years, then one season is equal to 8 months. Hence, the majority of farmers received about M$25 to M$100 per month of coupon subsidy. On the other hand, about 10 % received less than M$400 per season while about 24 % received more than M$800 per season. Therefore, in the case of Krian there was an absence of great inequalities in the distribution of the benefits of price subsidies because there were no extreme distribution as compared to data at the national level which portrayed great inequalities.

Income Profile of Krian Farmers

As noted in Table 9.11, the average monthly net income of farmers in Krian from padi alone was M$102.79 or M$822.32 per season. Since income from padi was only seasonal, farmers had to

find other supplementary jobs in order to earn additional income to finance their daily expenditures. For the poorest of farmers with no other sources of income, they were forced to seek odd jobs to sustain themselves while rice was consumed from their own stock for self-consumption. In addition, they managed to find supplementary food sources like fish, vegetables, etc. from the rivers or natural surroundings. Although these sources were by no means adequate, this ensured that the farmers did not starve when they faced hard times. In one sense this meant that the welfare of farmers were better off than their counterparts producing rubber because rubber cannot be consumed.

TABLE 9.20: Income From Other Sources (M$ monthly)

Sources	%	Ave. M$	Padi Income(M$)	Tot Month Y(M$)
None	9.3	-	102.79	102.79
One Other	65.3	173.00	102.79	275.79
> Than One	25.4	317.52	102.79	420.31
Total	100.0			

Note:-for farmer with no other source of income, padi income = 100 %
-for farmers with one other source of income, padi income = 37 %
-for farmers with two or more sources of income, padi income = 24 %

Tables 9.20 and 9.21 indicate the other income sources of Krian farmers. Table 9.20 shows the amount of income earned by farmers from the various income sources. About 90 % of farmers who relied exclusively on padi cultivation had a monthly income of about M$103. On the other hand, about 65 % who cultivated padi plus one

additional job earned a monthly income of M$276. Note that these income figures were still below the poverty line income of M$300 per month. Only about 25 % who cultivated padi plus 2 additional jobs managed to sustain an income above the poverty income,i.e. M$420 per month.

TABLE 9.21: Categories of Other Sources of Income, 1986

Source	%	Ave. M$
Hired Labour	4.5	83.75
Business	20.5	182.39
Pension	4.5	202.50
Govt. Employee	12.5	275.00
Remittances(child)	11.4	128.00
Other Agric.	8.0	104.29
Animal Husbandry	11.4	148.00
Rental Income	12.5	120.27
Others	14.7	166.92
Total	100.0	156.79

Table 9.21 shows the alternative job opportunities pursued by farmers in Krian. About 21 % had jobs in petty businesses like selling food, small contracting jobs, etc. Other agricultural activities and animal husbandry constituted another 20 %. However, off-farm income opportunities which gave the highest average returns were farmers working in government departments. Most of these part-time farmers usually worked in the afternoons when they were free while in the mornings their family tended the fields.

Expenditure and Savings Pattern of Households

Another way to find out and cross-check whether subsidies had any effect on the income position of farmers is to look at the expenditure pattern and savings position of farmers. An ideal way would be to compare the position " with and without subsidy ". A likely proposition would be that if the farmers managed to save more or spent more today than say at a time when there were no such subsidies, and considering that subsidies constituted about 25 % of their total padi income, then it is possible this might have been the result of the subsidy policy. However, as we have seen above, that since there were other alternative sources of income for the farmers, the increased savings or expenditure might have been attributed to this source or alternatively due to both factors. Hence, in this respect, the effect of off-farm income and price subsidies should be considered together by the government in any consideration of policy measures affecting farmers income and welfare.

TABLE 9.22: Expenditure Pattern of Farm Households, (M$ / month)

Item	M$	%
Food	164	45.2
Schooling	62	17.1
Transport	35	9.6
Utilities	16	4.4
Cigarettes	44	12.1
Others	42	11.6
Total	363	100.0

It would be quite instructive to look at the overall expenditure pattern of farmers in Krian in 1986 and 1978. Unfortunately, we have only data for 1986. From the above Table 9.22, we notice that the bulk of expenditure, constituting about 45 % of total expenditure was spent on food. Expenditure on schooling for children came next at 17 %. One interesting observation was the expenditure incurred on cigarette consumption at 12 %. This was quite significant because this unproductive expenditure could be used to finance other items or saved. We have to take note that this is the average expenditure pattern of all Krian farmers. Total expenditure at M$363 per month was slightly above the official poverty line but poverty is a prominent feature in Krian as we have seen above. (see Table 9.20) showed that more than 74 % of farmers in Krian earned a monthly household income below the poverty income of M$300.

TABLE 9.23: Ownership Pattern of Farmers Of Following Items Before And After Subsidy, 1978 and 1986

Item	1978	1986	Total	
	%	%	No.	%
Television	44.0	49.3	75	100
Radio	72.0	4.0	75	100
Bicycle	74.7	12.0	75	100
Motorcycle	41.3	37.3	75	100
Motorcar	2.7	2.7	75	100
Pilgrimage to Mekah	17.3	6.7	75	100
Home improvement	4.0	2.7	75	100

Table 9.23 lists the items normally owned by farm households which farmers normally purchased if they had surplus income. Items which were considered expensive and luxurious include television sets and motorcars while motorcycles were considered semi-necessary. From the Table, there did not seem to be any significant difference in ownership pattern before and after padi price subsidy was instituted. In fact cheaper items like radios and bicycles were already owned by farmers even before the subsidies were introduced. Hence, the effect of price subsidies is not obvious from the ownership pattern outlined above.

TABLE 9.24: Production Loans Among Farmers, 1986

Item	No.	%
Take Loan	57	76.0
Do Not Take	18	24.0
Total	75	100.0

Table 9.24 shows that about 76 % of farmers borrowed some money to cater for their recurrent expenditures in padi cultivation. Most farmers said that they borrowed from the Agricultural Bank. We can infer from this that farmers were able and willing to borrow and that they were able to pay back the sum from their earnings in both padi and non-padi activities.

Tables 9.25 and 9.26 look at the position of savings of Krian farmers. Apparently, more than 77 % of respondents did save some of their income. However, when asked the amount of savings held, most farmers were either reluctant to answer or gave vague and misleading

answers. Hence, it was not possible to know precisely the extent of savings of Krian farmers. However, we believe that the amount of savings held was very small. However, we should not discount the possibility that there might be instances where bigger and richer farmers did save or invested significant sums of money in the ASN scheme for example although it was not reflected in the findings. But in general, the poverty status of most of the farmers in this area precluded them from pursuing saving their income because there was little or nothing to save.

TABLE 9.25: Position of Savings Among Farmers, 1986

Position	No.	%
Save	58	77.3
Do Not Save	17	22.7
Total	75	100.0

TABLE 9.26: Place Where Savings Were Held, 1986

Source	%
Post Office	6.7
LUTH	9.3
Banks	24.0
ASN	54.7
Others	5.3
Total	100.0

What we have attempted to do in the above was to determine whether the increase in farmers' income through government subsidy

policies could be measured and observed from their savings behaviour, expenditure pattern or credit behaviour. From the available data, it is apparent that this is not a wholly successful method because not all the results given managed to prove the point. In addition, there existed many data limitations, for example to compare before and after subsidy situation. This might be due to the weaknesses in the data collecting procedures in the survey. Notwithstanding the above points, it could be seen that about 77 % farmers did save and 76 % did take loans in 1986.

Summary

We have analysed padi price subsidy at the farm level and can make the following conclusions:-

a) its effect on farmers' income have indeed been positive.

b) its effect on market surplus was also positive and

c) its effect on total output have also been positve.

6.0 ATTITUDE AND PERCEPTION OF FARMERS TOWARDS FERTILISER SUBSIDY

Introduction

Another important aspect that needs to be studied with regards to subsidies in this chapter is how farmers perceived and reacted to them. We believed that this is an important area to probe because the ultimate effect of whether subsidies would have an influence on increasing output or not would initially depend on how farmers perceived them and secondly, whether the farmers were responding positively or negatively to the subsidies and their reasons for undertaking alternative courses of action. In this section, we shall tabulate the result of the survey and analyse the following :-

a) attitude and response of farmers to fertiliser subsidy

b) attitude and response of farmers to padi price subsidy

c) an analysis of subsidy mentality of farmers

Fertiliser Supply, Its Quality and Administration

It has been established in Chapter 8 that farmers would be responsive to a reduction in cost of inputs by utilising them in greater quantities. In fact, that farmers in developing countries are responsive to price incentives has been universally acclaimed by many studies as mentioned in Chapter 4. In this part, we shall attempt to observe and analyse from the survey findings whether the data tends to confirm or deny this observation.

Table 9.27 shows that all the respondents received free fertilisers under the National Fertiliser Scheme irrespective of whether they were members of Farmers Association or not. The

important qualifying criterion for procurement of free fertilisers was only to show proof of tillage. This meant that all farmers benefited from fertiliser subsidy without exception.

TABLE 9.27: Whether Farmers Receive Free Fertiliser, 1986

Response	No.	%
Receive	75	100
Do Not Receive	-	-
Total	75	100

TABLE 9.28: Quality of Fertiliser Distributed Under Subsidy, 1986

Quality	No.	%
Good	40	53.3
Bad	35	46.7
Total	75	100.0

TABLE 9.29: Reasons Given For Poor Quality of Fertiliser, 1986

Reasons	No.	%
Adulterated	32	91.4
Other	3	8.6
Total	35	100.0

On the other hand, Table 9.28 shows that about 53 % of farmers believed that the quality of fertiliser distributed by the government was good while about 47 % believed that the quality was not satisfactory. Following from this, we would therefore expect most farmers who claimed that the fertilisers were of good quality

to get a fairly good yield. Of course, this situation assumed that the standard maintenance services were performed by these farmers. Most of the farmers who complained about the poor quality of fertilisers said that the fertilisers were adulterated. Although the LPP insisted that the quality of fertilisers was generally good and verified by their officials who undertook constant spot checks, it is possible that some unscrupulous manufacturers might have managed to dispose of their bad stocks to the Consortium responsible for distribution of fertiliser and ultimately reaching the farmers in this area.

TABLE 9.30: Whether Farmers Face Problems To Get Fertiliser

Response	No	%
No Problem	68	90.7
Face Problem	7	9.3
Total	75	100.0

TABLE 9.31: Kinds of Problems Faced By Farmers

Problem	No.	%
Physical Distance	4	57.1
Transport Charges	3	42.9
Total	7	100.0

Table 9.30 shows that about 91 % of farmers in Krian apparently did not face any problem in securing fertiliser supplies from the LPP. In fact when the LPP announced that farmers could collect the free fertilisers at the beginning of the planting season

at the LPP complex, it was the farmers' responsibility to collect them. Nine of the farmers who claimed that they had problems in securing fertiliser supplies were the ones who lived at the fringes of the area and very far from the fertiliser distribution centres and subsequently they had to incur additional transport costs to collect the fertilisers. (Table 9.31) Note that farmers who were not members of the AFA/PPPK had to pay the full charges for transportation while members had to pay only a flat rate of 50 cents per bag delivered.

TABLE 9.32: Response of Farmers to Statements On Fertiliser Supply

Statement	Agree	Disagree	Total
Dist. point of supply far from field	13.3	86.7	100
Inadequate supply of fertiliser	5.3	94.7	100
Delay to get supply at stipulated time	2.7	97.3	100
Fertiliser undersupplied to farmers	1.3	98.7	100

On the issue of fertiliser supply, we attempted to solicit the opinion of farmers on the efficiency of supply by asking farmers' views on four different situations. From the responses given in Table 9.32, it is quite clear that farmers were generally satisfied with the way fertiliser distribution was administered. From this it is apparent that the LPP and the Consortium responsible for fertiliser supply were able to overcome problems of supply and logistics which were quite serious in the early years of the implementation of the scheme. We can see that the majority of farmers interviewed expressed their satisfaction over the actions

taken so far. For example, distribution points have been centralised, supplies have been adequate, no delays in supplies and that farmers have been getting the right amount of assistance. In short, the administration of the fertiliser subsidy scheme was efficient. In contrast, many farmers said that when the scheme started in 1979 it was chaotic due to the presence of many irregularities.

Beneficiary of Subsidy and Mode of Utilisation

In this part, we shall analyse farmers' response on whether fertiliser subsidies have benefited them and mode of fertiliser utilisation by the farmers.

TABLE 9.33: Whether Fertiliser Subsidy Benefit Farmers, 1986

Response	No.	%
Benefit	75	100.0
Not Benefit	0	0
Total	75	100.0

Table 9.33 shows that all farmers interviewed genuinely felt that they had benefited from the scheme. About 77 % of farmers said that fertiliser subsidy had enabled them to lessen their expenditure and instead they were able to purchase other critical inputs like pesticides and weedicides. On the other hand, about 23 % of farmers said that fertiliser subsidy had enabled them to increase their crop

yield. (Table 9.34) In view of the above responses, it was not surprising that all the farmers interviewed insisted that the scheme should be continued. (Table 9.35)

TABLE 9.34: How Fertiliser Subsidy Benefit Farmers, 1986

Benefit	No.	%
Forgo Fertiliser Expenditure	58	77.3
Increase Padi Yield	17	22.7
Total	75	100.0

TABLE 9.35: Whether Fertiliser Subsidy Scheme Should Continue

Response	No.	%
Continue	75	100
Discontinue	-	-
Total	75	100

TABLE 9.36: Form Fertiliser Subsidy Should Take if Continued

Form	No.	%
In kind(As At Present)	69	92.0
Cash	5	6.7
Others	1	1.3
Total	75	100.0

On the mode of assistance that they preferred, Table 9.36 shows that about 92 % of farmers said they prefer to receive fertiliser subsidy in kind rather than in cash as the practice at present. This finding is very interesting because nearly always people would

prefer cash which is more liquid than material assistance. This finding is also unusual because it contradicts everything known about subsidy. Unfortunately, we did not ask the farmers the reasons for showing this preference but it would be interesting to speculate the probable reasons. The following reasons may make this choice likely. First, that farmers tend to get material assistance more quickly than cash. Second, that the value of the material is greater than the value of the subsidy. Third, that it probably shows that farmers in Krian understand the value of fertiliser inputs in improving their yield and hence they prefer it to cash.

TABLE 9.37: Response of Farmers if Fertiliser Subsidy Abolished

Response	No.	%
Continue Planting Padi	75	100
Discontinue Planting	-	-
Total	75	100

The findings of Table 9.37 is also very interesting. It shows the response of farmers if fertiliser subsidy were cut by 100 %. All the respondents unequivocably replied that they would continue to plant padi even if there were no fertiliser subsidy. This shows that the impact of subsidy is not that tremendous as commonly known. The next question that would be interesting to ask would be by how much would output fall if fertiliser subsidy were abolished. Judging from the above response, we would probably get a similar answer as above. In this regard, it would be relevant to put together the responses

given by the rubber smallholders in Chapter 7 (Tables 7.38, 7.41 and 7.33) with that of Table 9.37. Therefore what is important in this context is that farmers' reliance upon subsidy is not absolute. In one sense, the response given was quite rational and expected in the context of padi farming in Malaysia because farmers have to continue to plant padi, with or without fertiliser subsidy, as they had always done in the past in order to survive. In this regard, subsidies are therefore not indispensable and can be thought to function only as a catalyst rather than a prerequisite for farming. Therefore, in this sense farmers are not displaying the " subsidy mentality " as claimed.

It is important to realise that the amount of fertiliser distributed to farmers need not necessarily be equal to the amount applied to the crop. This gap could be attributed to abuses committed by farmers which ultimately lead to waste. For example, Table 9.38 shows that one-third (about 64 %) of farmers felt that fertiliser subsidies were not properly used. This implies that there is wastage. The question to ask is if farmers get fertilisers for free to whom can they sell it and why is there a market for it. It should be understood that fertiliser is only distributed freely to padi farmers planting padi. However, since these fertilisers are universally applicable to other crops as well, naturally there is a demand for them. In addition, farmers can find ready market from Chinese commercial farmers who plant vegetables, fruits, etc. Therefore, the most common abuse was the unauthorised re-sale of fertilisers to a third party at great discounts. Another abuse was the non-application of part of the fertiliser to the padi crop as

shown in Table 9.39. Many reasons could be given to explain the presence of these abuses. One was the fact that many farmers were so poor that they had no choice but to sell part of their fertiliser supplied under the subsidy scheme in order to get cash to buy other more essential goods. Another possible reason was that since the soil condition was not uniform among different locations in Krian (where some areas were more water-logged than others) some farmers in the water-logged areas saw no logic in applying fertilisers because it would not be effective in influencing output. So they would rather apply the fertiliser to other crops that they planted. However, it should be noted that the above responses were only farmers' perception as to how their colleagues were reacting to fertiliser subsidy. It is possible that the farmers who perceived the presence of these abuses may be committing them himself. The only way in which we can say with certainty of the presence of abuses would be the successful prosecution of offenders in the law courts. However, as many farmers agreed (Table 9.40), this action was rarely resorted to because there were no provisions in the existing regulations for the authorities to act in cases of misuse.

Although some form of abuse in fertiliser usage was perceived to have occurred it could safely be said that it was not widespread. In one study it was found that the difference between fertiliser supplied and fertiliser applied was only 5 %. (see Fatimah, p.373) If the difference was very marked, then the level of output and profitability would be very marked also but as we have seen this was not so. (see profitability analysis)

TABLE 9.38: Opinion Whether Fertiliser Subsidy Properly Utilised

Opinion	No.	%
Properly Used	27	36
Not Properly Used	48	64
Total	75	100

TABLE 9.39: Reasons Think Fertiliser Subsidy Not Utilised Properly

Reason	No.	%
Re-Sold Fertiliser	41	85.4
Used In Other Crop	7	14.6
Total	48	100.0

TABLE 9.40: Way to Overcome Abuse in Fertiliser Subsidy Scheme

Method	No.	%
LPP Show Correct Way To Use	6	12.5
LPP Monitor Fertiliser Use	7	14.6
Prosecute Offender In Court	35	72.9
Total	48	100.0

7.0 ATTITUDE AND PERCEPTION OF FARMERS TO PADI PRICE SUBSIDY

We have discussed in detail some aspects of padi price subsidy in the previous chapter. In this part, we shall rely upon survey data to analyse further the effects of price subsidy on farmers.

Similar to fertiliser subsidy, all the farmers interviewed collectively agreed that padi price subsidy have benefited them through an increase in their income level because this subsidy was given in the form of coupons and redeemable for cash at selected government financial institutions.

TABLE 9.41: Waiting Time Before Farmers Able to Cash Coupons

Time	No.	%
1 - 2 days	2	2.7
3 - 5 days	5	6.7
6 - 7 days	21	28.0
> 7 days	47	62.7
Total	75	100.0

Table 9.41 shows that the about 63 % of farmers had to wait for more than seven days before they could cash their coupons. According to the farmers, this time period was considered tolerable and did not seem to inconvenience them. However, we believe that this is not the true position of the farmers because being poor means that the utility of immediate cash income would be great. In addition, farmers response to questions related to what form of subsidy they would have preferred contradicts with their response above.

TABLE 9.42: Farmers' Response About Coupon Subsidy (%)

Statement	Satisfied	Not Satisfied	Total
Coupon issued by buyers of padi	76.0	24.0	100
Moisture deductions by buyers	20.0	80.0	100
Details stated in receipts	93.3	6.7	100

TABLE 9.43: Whether Admin. of Price Subsidy Scheme Satisfactory

Response	No.	%
Satisfactory	43	57.3
Unsatisfactory	32	42.7
Total	75	100.0

Tables 9.42 and 9.43 considered farmers' reaction on the administration of the subsidy scheme. Table 9.42 shows that about 57 % of farmers were quite satisfied with the overall administration of the scheme while 43 % were not very happy. Most of the farmers who were unhappy with the scheme complained about the high deduction rates. This was clearly shown in Table 9.42 where about 80 % of farmers voiced their dissatisfaction with the percentages deducted which they claimed were too high and adversely affected their gross income from padi. Note that the average amount of deductions amounted to about 15 kg. per 100 kg. of padi bought. As we have noted in the previous chapter that the LPN claimed that deduction rates had to be high because farmers were in general selling wet and poor quality padi.

TABLE 9.44: Whether Farmers Heard Abuses in Admin. of Price Subsidy

Response	No.	%
Heard	39	52.0
Not heard	36	48.0
Total	75	100.0

TABLE 9.45: Form of Abuses that Occurred

Form	No.	%
Farmers Collaborate With Buyers	8	20.5
Buyers Collaborate With Millers	3	7.7
Millers Collaborate With LPN Staff	20	51.3
Others	8	20.5
Total	39	100.0

Similar to other forms of government assistance programmes including subsidies, a common phenomenon is the high occurence of abuses. For example, abuses occurred when unintended beneficiaries enjoyed the benefits of the subsidy more than the intended group. Table 9.44 indicates that about 52 % of farmers thought that they have heard of abuses in the implementation of the scheme. Table 9.45 list the forms of abuses. About 59 % seemed to blame the millers and buyers while only about 21 % blamed their fellow farmers for committing the abuses. On the whole, what we could say for certain is that abuses did happen in the scheme but we could not say for sure the extent of abuse in Krian. If data on number of prosecutions were present then we could be sure.

TABLE 9.46: Response of Farmers if Price Subsidy Vary(in % terms)

Response	Subsidy Decline 50%	Subsidy Increase 100%
Increase Padi Area	18.7	60.0
Decrease Padi Area	1.3	4.0
No Change From Present	76.0	36.0
Others	4.0	-
Total	100.0	100.0

In addition, farmers were also asked questions with regard to what their responses to production and market surplus would be if price subsidy were to vary from the present rate. In Table 9.46, farmers indicated that if there was a positive change in price subsidy, they would increase acreage devoted to padi in order to get a greater output and subsequently to increase the amount of padi sold in the market. On the other hand, if there was a negative change in the rate of price subsidy, it would not matter much to the farmers and would not affect their status quo in terms of area devoted to padi and their committment to padi production.

TABLE 9.47: Whether Increase Market Surplus If Subsidy Increase

Response	No.	%
Increase	23	30.7
No change	52	69.3
Total	75	100.0

As regards to market surplus, Table 9.47 shows that only about 31 % of farmers said that they would increase their sales if the price subsidy was increased. Here there seems to be a contradiction because from Table 9.16 the amount of padi offered for sale in 1986 as compared to 1978 increased by 57 %. One possible explanation for this apparent inconsistency might be that the 31 % of farmers who indicated that they might increase sales might account for the bulk of market surplus indicated in Table 9.16.

TABLE 9.48: Response of Farmers if Subsidy Were to be Withdrawn

Response	No.	%
Find Alternative Job	2	2.7
Continue Plant Padi(at diff. acre)	24	32.0
Continue Plant Padi(no change in acre)	28	37.3
Plant Padi For Own Consumption	14	18.7
Others	7	9.3
Total	75	100.0

Table 9.48 shows that even if the price subsidy were to be withdrawn more than 60 % of farmers would continue to cultivate padi. As the case with fertiliser subsidy, this showed that farmers' attitude to price subsidy was not one of absolute reliance but rather as an incentive for farmers to work harder. Here farmers' attitude is simply to make the best use of whatever aid there is while aid is around.

TABLE 9.49: Whether Farmers Agree Subsidy Be Based On Actual Output

Response	No.	%
Yes	70	93.3
No	5	6.7
Total	75	100.0

In addition, farmers were asked to indicate their choice of the form of price subsidy that they favoured and reasons for their choice. This is to see whether the present form of price subsidy which was given in the form of redeemable coupons was thought suitable and convenient by the farmers. From Table 9.49 it can be seen that more than 93 % of respondents said that they would prefer if the price subsidy were given based on actual output of padi produced by farmers rather than based on sale of padi as practiced at present. The reasons quoted by farmers for prefering this method is given in Table 9.50 below. Most farmers indicated that they prefered the alternative form because they would be able to get more subsidies.

However, when it came to the question of choice between increase in price subsidy or an increase in market price of padi, there was a split decision as Table 9.51 shows. About 49 % of farmers preferred an increase in the price of padi while 37 % preferred an increase in price subsidy. Among the reasons for a preference of a price increase, more than 75 % of farmers felt that the coupon system was cumbersome while 16 % of farmers said that the acquisition of immediate cash was important. Of the 37 % of farmers

who still preferred coupon subsidy, most said that a padi price increase would burden the consumers and would eventually affect the farmers themselves if they purchased rice in the market.

TABLE 9.50: Reasons Farmers Prefer Subsidy Based On Output

Reasons	No.	%
Farmers Able To Get More Subsidy	9	12.9
Farmers Get Subsidy For Padi Not Sold	59	84.3
Government Able To Avoid Cheating By M/M	2	2.9
Total	70	100.0

TABLE 9.51: Chioce Between Price Increase & Subsidy Increase

Choice	No.	%
Increase Padi Price	37	49.3
Increase Price Subsidy	28	37.3
Indifferent	10	13.3
Total	75	100.0

Table 9.52 shows that on the question of whether present rates of price subsidy were reasonable (M$16.54 / 100kg) about 59 % of farmers said that it was so. Of those farmers who thought the present rate was not reasonable, about 45 % said that M$20.00 / 100 kg. was more realistic while the others wanted a subsidy increase of between M$25 - M$50.00 / 100 kg.

TABLE 9.52: Rate of Price Subsidy Considered Reasonable (M$/100 kg)

Rate	No.	%
M$20	14	45.2
M$25	8	25.8
M$55	9	29.0
Total	31	100.0

Summary and Conclusion

From the above analysis, it is clear that farmers did consider both types of subsidies as useful and assisted in enhancing their production and income, but the farmers feel they benefited more from price subsidies than from fertiliser subsidies. Although subsidies were seen as only a privilege rather than as an absolute right to farmers, our calculations showed that it managed to boost farmers' net income. Consequently, the absence or reduction of subsidies would affect greatly the level of poverty among farmers. Despite this fact, subsidies were by no means a limiting factor in affecting the work attitudes and effort of the farmer. This implies that even if the government were to phase out subsidies, farmers in Krian felt that they have no choice but to carry on farming although its implications on the poverty situation for the farmers would be serious indeed. For one thing farmers here had experienced farming for more than 30 years and there were times in the past when they had virtually no assistance from the government. Yet despite their difficulties they had managed to survive. But from the point of view of efficiency and productivity of the region as a whole, subsidies will still be the key to higher productivity and a mechanism for

redistribution of income. Hence, as we have noted in Chapter 8 that Malaysia is a relatively high cost producer of rice in Southeast Asia and the government feels that the only way for the country to sustain rice production is through an expensive subsidy policy. However, this assumption can be questioned because rice subsidy policy in Malaysia is basically an instrument of a welfare state where income is redistributed not in the form of cash to poor households in general but in the form of input and price subsidies. Therefore, the purpose of subsidy is to redistribute income rather than to stimulate production. This point can be clearly seen for example in Table 9.48 where three-quarters of farmers replied that even if price subsidy were to be reduced by 50 %, farmers would not change their production pattern. Hence, the impact of price subsidy on production is relatively small while its impact on income is big. Therefore, it seems that padi price subsidy is in large part an instrument of income redistribution rather than resource allocation and output stimulation.

8.0 SUBSIDY MENTALITY OF FARMERS

The concept of subsidy mentality in the context of Malaysian agriculture has been elaborated in Chapter 5. Basically, it is an attitude of absolute and persistent reliance of farmers upon the government and the continued patronage of the government to sustain the farmers' livelihood has been a necessary condition for the farmers as a group to pursue a course of action. According to the view held by the government, this attitude is hypothesised to be negative and detrimental to the long term development of the farmers because it tend to perpetuate a situation of dependency so often condemned by many quarters. This attitude, it is claimed, tends to stifle initiative and innovation. It is in this context that we want to find out how farmers in Krian perceived themselves in relation to subsidies and to analyse whether there is such a thing called a " subsidy mentality ". This concept is very elusive and very often assumed to be a given by many economists. In this part we shall not attempt to measure it but instead try to clarify it further and understand it more through an analysis of the survey data. This section follows basically the same pattern as Chapter 7 where we analysed the " subsidy mentality " of rubber smallholders.

TABLE 9.53: Whether Farmers Can Succeed Without Subsidies

Response	No.	%
Not Possible	68	90.7
Possible	7	9.3
Total	75	100.0

TABLE 9.54: Whether Self-Reliance of Farmers Affected By Subsidies

Response	No.	%
Negative	66	88.0
Positive	9	12.0
Total	75	100.0

TABLE 9.55: Reasons Self-Reliance Not Affected If Got Subsidies

Reason	No.	%
Incentives For Farmers To Work Harder	57	86.4
Would Reduce Farmers' Burden	7	10.6
Others	2	3.0
Total	66	100.0

Tables 9.53 to 9.55 tried to find out the general response of farmers with regard to subsidies. Table 9.53 shows that more than 90 % of farmers in Krian believed that their effort in planting padi would not be successful if the government did not support them and intervene on their behalf by granting various subsidies. Here we need to distinguish between willingness to plant padi without subsidies and being succeesful in the venture. However, relying upon subsidy apparently did not affect the self-reliance spirit of farmers as Tables 9.54 and 9.55 show. It has always been contended that the spirit of self-reliance is not conducive in an environment where subsidies is prevailing. However, the reverse situation seems to be case here if the responses of the farmers are to be believed. In this connection, a moot point is that if farmers' work effort is greatly enhanced through the incentive effect of subsidies, then

subsidy policies would be highly justified. Although the evidence adduced from the survey is too superficial to make any conclusions on farmers' attitude to subsidies, in the case of Krian, there is a need for the government to undertake a detailed attitude survey before it can make any statement with respect to farmers' work attitudes. As things stand at present, it would be grossly mistaken to label farmers in Krian as having a " subsidy mentality " unless empirical validation is given. Our survey has cast some doubts as to the validity of the government's negative labelling for farmers as a whole. (Table 9.55) For example, as Table 9.54 shows, only 12 % of farmers claimed that their spirit of self-reliance would be affected if subsidies were present while the overwhelming majority believed otherwise.

TABLE 9.56: Govt. Expectation of Farmers' Behaviour Towards Subsidy

Expectation	No.	%
That More Farmers Would Be Self-Reliant	54	72.0
Govt. Warning To Phase Out Subsidy	7	9.3
That Farmers Use Subsidies Effectively	4	5.3
Others	10	13.3

As to why the government was using the term " subsidy mentality " to describe the farmers, Table 9.56 tries to show what farmers perceived the government expected to achieve from doing so. About 72 % of farmers believed that the government wanted them to rely less on government subsidy probably because the government was having a financial crisis. About 9 % thought that it was used as a

as a signal and warning that subsidies was to be phased out. As to the applicability of the concept to individual farmers, more than 90 % agreed that the nurturing of such mentality was undesirable because it was degrading upon the dignity of an individual to depend upon others.

TABLE 9.57: Farmers' View On Subsidy Mentality(in % terms)

Views	Agree	Disagree	Total
SM Exists Due To Poverty	88.0	12.0	100
Farmers In Hardship If No Subsidy	74.7	25.3	100
SM Exist Due To Govt. Patronage	86.7	13.3	100
Subsidy To Be Used To Help Poor	98.7	1.3	100
Subsidy No Guarantee To Better Life	94.7	5.3	100

Table 9.57 seeks to solicit farmers' views on subsidies by asking their response on five related statements. From the Table it is apparent that farmers believed that the great degree of reliance of farmers upon the government was not due to any inherent attitude of the farmers but to economic realities of poverty and deprivation. This is in fact a true reflection of the situation as statistics on poverty levels of farmers in general and in Krian in particular show. As to the statement that farmers would be facing difficulties if there were no subsidies, more than 70 % agreed that it is true. The response to the third statement is interesting because more than 86 % of farmers believed that the government was at fault for nurturing the subsidy mentality among farmers by instituting hand-out programmes in the first place. The farmers claimed that they

would never " demand what was not rightfully theirs. " However, about 99 % believed that the government should make use of subsidies liberally to help the needy farmers to stand on their own feet. Despite this, farmers still believed that it was not subsidies per se that will guarantee a better livelihood for them but their positive and right attitude to work.

Summary

In this section, we have tried to analyse rather superficially the concept of " subsidy mentality " of Krian farmers by analysing their responses to a number of questions which we thought to have a bearing on this phenomenon. We found that farmers do tend to rely upon government subsidy not because of their inherent qualities but rather because they were very poor and have none to rely upon except the government. However, an important finding is that although farmers do rely a great deal upon subsidies to boost their income levels, they sincerely believe that even if they did not receive such assistance in the future, they are able to rely on their own resources and can survive. Hence, we now have two opposing propositions. On the one hand the government believes that farmers are chronically dependent upon it for subsidies and hence the label " subsidy mentality ". On the other hand, farmers themselves believe that they could indeed make do or survive without the level of subsidisation as it exist today. Therefore, as far as policy implications are concerned, it is up to the government to decide what level of assistance farmers really need and whether the present " liberal " subsidy policies of the government should continue. It

should also be remembered that economic considerations are by no means the only consideration when government formulate policies relating to farmers. This is obvious from our discussuion of the allocative and distributive effects of subsidies. Hence, although subsidies may not be the most efficient and optimum fiscal instrument at the disposal of the government, we believe that the government would be willing to tolerate a certain level of leakages or spillovers of subsidy policies in order for it to balance its objective of allocation of resources, distributive justice and political convenience. As a caveat, it has to be remembered that this is by no means a definite conclusion on farmers attitude on subsidies. We have only establish a preliminary statement on a few matters of great concern to both policy makers and planners and farmers. Since this part of the discussion is only an adjunct to the thesis proper, it has to be taken up in another study in the future.

11.0 FINDINGS AND POLICY IMPLICATIONS

From the above analysis we can make the following conclusion:-

a) Fertiliser subsidy enabled farmers to save on their fertiliser expenditures while enabling them to increase expenditure on other important inputs like pesticides, weedicides etc.

b) Despite the existence of fertiliser subsidies, the returns from padi cultivation was still low. However, fertiliser subsidies contributed to a great reduction in input costs of farmers.

c) Productivity tests conducted suggest that returns to padi cultivation were more favourable compared to pre-subsidy periods.

d) Farmers' response and attitude to both types of subsidies were generally favourable and positive.

e) Although farmers did consider both types of subsidy as useful and assisted them in enhancing their income, farmers feel that they benefit more from price subsidy rather than from fertiliser subsidy.

f) Although farmers tend to display a dependent attitude upon the government for subsidies, they claimed that subsidies were not indispensable and that they could manage on their own if circumstances were to force them.

CHAPTER TEN

FINDINGS AND CONCLUSION

1.0 INTRODUCTION

In this thesis, we have analysed at length the system of agricultural subsidies in the rubber and padi sector of Malaysia. We have attempted to assess the impact of subsidies on resource allocation, income distribution and on farmers' perceptions and attitudes towards subsidies. As stated in the introductory chapter, the purpose of the study has been to establish the following :-

i) whether subsidies have contributed positively or negatively towards increasing the productivity and income levels of smallholders and farmers,

ii) whether smallholders and farmers exhibit the "subsidy mentality" as alleged by the government and hence are less productive, and

iii) whether there is a case for a continuation of existing subsidy policies in the rubber and padi sector in Malaysia.

The specific findings of the study with regard to crop type have been spelled out in the individual chapters on rubber and padi. In this chapter we shall try to integrate and synthesize all the findings comprehensively and to propose certain policy measures that the Malaysian government could consider for adoption.

2.0 ALLOCATIVE AND REDISTRIBUTIVE EFFECT OF SUBSIDIES

It is clear from the study that there is no standard response of subsidies. Different kinds of subsidies, for example, input, output and a subsidy on a process tend to have different effects. In addition, subsidies also tend to exhibit different results as regards to different levels of analysis, for example between national and farm level for the same crop. Therefore, the implication is that we cannot make a generalisation as to the effect of subsidies. Each case has to be considered on an individual basis. Table 10.1 summarises the effect of subsidies in our study.

Table 10.1: Allocative & Redistributive Effect of Subsidies

CROP	LEVEL OF ANALYSIS	EFFECT OF SUBSIDY ON		
		HECTARE	YIELD	PROD
RUBBER	NATIONAL	(+) (S)	(-) (S)	(+) (S)
RUBBER	FARM	(-) (S)	(-) (NS)	(-) (S)
RICE 1	NATIONAL	NA	(+) (NS)	(+) (NS)
RICE 2	NATIONAL	NA	(+) (S)	(+) (S)

Note: 1 = Fertiliser Subsidy: 2 = Padi Price Subsidy:

HECTARE = Hectares Replanted: YIELD = Yield; PROD = Total Production

(S) = Significant ; (NS) = Not Significant

(+) = Positive Correlation; (-) = Negative Correlation

NA = Not Applicable

Table 10.1 summarises the allocative and redistributive effect of subsidies in the rubber and padi sector. It is clear from the table that the results are not uniform between crops and among crops and at different levels of analysis. We can summarise the findings as follows :-

i) For rubber, the regression analysis at the national level shows that the subsidy variable was significant statistically in all the models but its correlation with the dependent variable was positive only in the replanting and total production function. For the yield equation, the correlation was negative.

ii) For rubber, the regression analysis at the farm level shows that the subsidy variable was significant in two cases but all the correlations were negative.

Hence, there does not seem to be any systematic trend of the effect of subsidy between the national and farm level in rubber. Hence, different results have different implications as far as policy formulation is concerned. Why are the results different and which result is more reliable? Is it a problem of data specification or if not are the results empirically valid? To answer this question, there are a possible number of explanations, for example there is a possibility of error in the data collected at the farm level either because respondents were not telling the truth or the model is not correctly specified or that there was a sampling error. On the other hand, the results could be correct for both implying that the effect of subsidy is different among different localities and among different groups of smallholders and therefore no generalisation could be made. In

this matter, we shall assume the latter because there is no way for us to verify which result is more reliable because empirically both are correct. The only way to confirm the results, however, would be to compare the findings of this study with that of other similar studies. Since there is a dearth of studies at the farm level on rubber crop on the allocative and redistributive effect of subsidies, there is a need to initiate such studies. However, as we have mentioned in Chapter 7, smallholders in Perak tend to respond differently to replanting subsidies because of the peculiar situation in Perak and the socio-economic environment in which they live and work. Hence, we believe that RISDA need to review their implementation policies in order to ensure that smallholders in Perak could benefit fully and positively from the replanting subsidies and to enable them to achieve positive results in their replanting efforts and hence on productivity, income and yield.

As for the implications of the finding at the national level, the results suggest that replanting subsidies did indeed achieve its objective in stimulating the amount of replanting and led to an increase in total production. Only the yield variable was negatively correlated. This means that replanting grants is generally a positive and an appropriate policy and hence should be continued. However, RISDA needs to ensure that its follow-up and extension programme is made more efficient in order to optimise the effect of this subsidy. In addition, as has been mentioned previously, the unorganised and individual mode of rubber

cultivation has outlived its usefulness and for the future, a viable rubber holding has to be on a relatively bigger scale either through group farming or the acquisition of bigger landholdings for the smallholders. If not, despite pouring in millions of cash in the form of subsidy, it will not lead to the achievement of the desired objectives.

Table 10.1 also summarises the results for the rice sector as follows :-

i) For rice at the national level, the regression analysis shows that fertiliser subsidy was not significant for the yield and production function although its effect was positive in both cases. In the yield equation, the positive result probably means that fertiliser application was optimal and yields were giving positive returns. However, since the coefficient was not significant, we cannot make this interpretation. This shows that fertiliser subsidy did not have the desired effect on increasing yield and hence total production.

ii) There is no regression for rice at the farm level because of the limitations of data and difficulty of model specification. Hence, we shall have to rely on secondary data sources to analyse the effect of subsidies and make certain inferences as far as its effectiveness is concerned.

iii) The analysis at the national level also suggest that fertiliser subsidy enabled farmers to use more fertilisers. In addition, padi price subsidy was able to increase farmers' earnings but was not able to push farmers above poverty levels.

Also non-beneficiaries benefited more from this subsidy than small farmers.

iv) For padi price subsidy, the results show that at the farm level, it is positive and significant in both yield and production. This confirms that padi price subsidy is more allocative in function rather than redistributive. It also shows that the objective of the padi price subsidy to stimulate supply response have been achieved. However, the study finds that income have been distributed to the wrong people and that there is a skewed distribution in favour of bigger farmers and middlemen. Therefore, in order to help small farmers to increase their income level, it would be necessary to modify the subsidy scheme. For example, as agreed by many farmers, price subsidy should be given based on actual output of padi rather than on sale to the market. This would then ensure that only farmers who worked and toiled the land would benefit from the subsidy.

From the above observation, it is thus clear that subsidies may not lead to a positive effect as many studies have suggested. Therefore, in the context of subsidies in the rubber and rice sector of Malaysia, it is our contention that the policy is not wrong or bad but rather the implementation is poor and inefficient. In addition, subsidies have been resorted to not so much for allocative purpose but as an income redistribution measure. If this is so, then there is a limit to this because the policy is bound to be expensive and secondly, the intended target group may not benefit from it because there is leakage in the

system. However, purely from the efficiency point of view, there is no justification of having an expensive subsidy policy in the rice sector at least because rice could be imported more cheaply from abroad. However, political considerations have ensured that subsidies were perpetuated. In addition, there is a consideration to ensure some measure of food security in the country and that there is a social need to assist the majority of poor farmers in the country to increase their income level through subsidies.

As for subsidies in the rubber sector, it is not a pure subsidy because replanting grants originate as a tax-cum-subsidy scheme where smallholders are also direct contributors to the subsidy. Hence, they have a greater right to this subsidy than farmers in the rice sector. Therefore, when considering whether to phase out subsidies this fact must be taken into consideration. However, the most important point to consider with regard to the usefulness and effectiveness of subsidy policies is that a subsidy policy is not a panacea for the problems in the agricultural sector. It has to be realised that subsidies are firstly, temporary measures meant to solve bottlenecks in the system and secondly, that subsidies cannot be a substitute for good and wise policy. Hence, to enable subsidies to work effectively, the structural and institutional framework in which farmers work must be conducive and receptive to a subsidy policy. For example, if the majority of farmers are poor, landless, old and not educated it is not a conducive environment. Hence, in this situation subsidies can only be redistributive in nature but not able to

function effectively and efficiently as an allocative mechanism. Therefore, the utility of a subsidy policy is not fully realised. And this is precisely why most subsidy policies in LDCs fail. We can mention the following factors to be responsible for the effectiveness of a subsidy policy :-

i) the way it is administered

ii) farmers' attitude and response to it

iii) socio-economic environment facing the farmers

iv) poverty level of farmers

v) the amount of subsidies given

vi) whether there is monitoring of subsidy programmes.

Therefore, the infant-industry argument for subsidies in the Malaysian context is not applicable and valid anymore because the " infant never seems to grow ". In general, subsidies in Malaysian agriculture have outlived their usefulness and is a much abused instrument. It is not economically justified as a development strategy although it is a popular measure. Among the disadvantages of a subsidy policy include the following :-

i) it may not achieve its objective

ii) it is expensive

iii) it may erode the self-reliant spirit of farmers because it leads farmers to a state of dependency.

3.0 SUBSIDIES AND SUBSIDY MENTALITY

From the study it is clear that farmers admitted that they have the so called " subsidy mentality " in the sense that they

could not adapt or innovate without the assistance of government subsidy. However, it has to be realised that in the present situation of farmers in Malaysia, it is almost impossible for farmers not to depend upon government subsidies because the majority of farmers are poor. Hence, poverty is the main factor which led farmers to be dependent upon government subsidy. But it would be difficult for the government to claim that farmers have the " subsidy mentality 'in the perjorative sense. It hardly needs to be mentioned that a self-reliant strategy is self-defeating if poverty is the norm, especially if the subsidy policy meant to increase farmers' income fails to do so. However, we have only established that there exist the phenomenon of "subsidy mentality" and the probable reasons for its existence. There is a need to develop this concept further so as to enable us to measure "subsidy mentality " through the use of analytical measures like an Index of Subsidy Mentality which is beyond the scope of this study.

4.0 SUBSIDY POLICIES IN THE FUTURE

In our study, we have discussed the effect of three kinds of subsidy, namely input subsidy (fertiliser subsidy), output subsidy (padi price subsidy) and a subsidy based on technology/process as in the case of the replanting grants. From the study, we have reached some mixed conclusions because some subsidies have positive allocative effect while others do not. Following from this, there are two options available to the

government, namely either to scrap all subsidies or modify the existing ones. We have opted to recommend the latter mode of action in the case of fertiliser subsidy whereby the administration of the subsidy should be reviewed. For example, instead of subsidising fertiliser, it is more appropriate to subsidise other inputs like pesticide or weedicide which are becoming more indispensable to farmers in the production process.

In addition, there is a possibility of attaching all subsidies not to output, as in the case of the padi price subsidy, but to acts of innovation and especially on new inputs. In theory, this argument is supposed to be good and valid. But in practice, as the Malaysian experience shows, tying subsidies to inputs does not seem to increase output or yield. Hence, there is a problem here. Although we may be able to reconcile the results from the Perak case by suggesting that replanting subsidies may not have been administered effectively there or smallholders in Perak may have perverse supply response or some other probable explanation attesting to the uniqueness of Perak, the fact that subsidies give negative results is very disturbing to planners and policy makers. Hence, there is a need to have more independent studies and assessment on the effect of replanting subsidies in other parts of Malaysia or even in other parts of Perak before we can confirm conclusively that subsidies have a negative effect and that it should therefore be scrapped.

A related question to ask is what should the rationale for subsidies be in Malaysia and in what form should it be offered ?

This is an important policy question to address. Based on the study, it is shown that subsidies in Malaysia was given mainly based on allocative and redistributive considerations as in the case for the padi subsidy. However, although present government policy is to discourage farmers to rely on subsidies, it is envisaged that in the foreseeable future, subsidies in the rice sector will continue to be based on redistributive rather than allocative grounds. Until and unless the government is willing to apply strict economic criteria in the granting of subsidies, subsidies will continue to act as a mechanism for equalising income distribution in Malaysia. As for replanting subsidies there may be a problem to phase out this subsidy if it does not give positive results because smallholders contribute directly to it through the cess payments. Hence, the only option available is to ensure that it is effectively administered.

5.0 CONCLUSION

Although this study cannot be conclusive on the issue of agricultural subsidies in Malaysia, it is hoped that it has been able to contribute in a small way to the continuing quest for more research on agricultural subsidies. It is hoped too that the concept of subsidy mentality be explored further and a different study be initiated. Until then the concept will still be tentative and conceptual in nature.

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فيهن برکواس کماجوان فکبون کچيل فروسهلنکته

APPENDIX 1

PEJABAT KETUA PENGARAH
PIHAK BERKUASA KEMAJUAN
PEKEBUN KECIL PERUSAHAAN GETAH
TINGKAT 12, BANGUNAN RISDA,
JALAN AMPANG, PETI SURAT 11067,
KUALA LUMPUR.

Telefon: 03-4064496
03-4640422 Sam. 101
Telex: MA 31211
Kawat: RISKUL

Rujukan Tuan:

Rujukan Kami:

TARIKH: 5hb Ogos, 1986

Pengarah RISDA Negeri
Perak,
No:60, Jalan Istana,
Ipoh,
PERAK.

(U.P: En. Affendi Tan Abdullah)

PENYELIDIKAN TERHADAP PEKEBUN KECIL GETAH
OLEH ENCIK AHMAD RUSLI BIN JOHARIE

Suka saya maklumkan kepada tuan bahawa Encik Ahmad Rusli bin Joharie, seorang Pegawai Tadbir dan Diplomatik, sedang mengikuti kursus peringkat Ph.D. di University of Bath, England. Pengajian beliau adalah dibawah tajaan Jabatan Perkhidmatan Awam Malaysia. Beliau masakini berada di - Malaysia untuk mencari maklumat serta bahan-bahan untuk penyelidikannya. Disamping itu beliau bercadang untuk membuat suatu survey dikalangan pekebun-pekebun kecil di Negeri Perak. Kajian yang hendak dijalankannya ialah untuk mengetahui kesan rancangan bantuan Kerajaan terhadap produktiviti serta taraf hidup pekebun-pekebun kecil.

2. Sehubungan dengan ini, saya meminta agar pihak tuan dapat memberi segala kerjasama serta bantuan yang diperlukan bagi membolehkan Encik Ahmad Rusli menjalankan survey dikalangan pekebun-pekebun kecil di Negeri Perak.

Sekian, terima kasih.

"BERSIH, CEKAP, AMANAH"

(ABD. HALIM B. DATO' HJ. ABD. RAUF)
TIM. KETUA PENGARAH KANAN,
RISDA.

/ahd.

APPENDIX 2

BLOK B, TINGKAT DUA,
KOMPLEKS PEJABAT DAMANSARA,
JALAN DUNGUN, DAMANSARA HEIGHTS,
PETI SURAT 1005,
KUALA LUMPUR 23-04.

KETUA PENGARAH,
LEMBAGA PERTUBUHAN PELADANG

Pengarah,
LPP Negeri Perak,
No. 8, Medan Kidd,
Peti Surat 89,
30710 Ipoh.

Tuan,

Penyelidikan Terhadap Pesawah-pesawah
Oleh Encik Ahmad Rusli bin Joharie

Suka saya maklumkan kepada tuan bahawa Encik Ahmad Rusli bin Joharie, seorang Pegawai Tadbir dan Diplomatik sedang mengikuti kursus Ph.D di University of Bath, England. Pengajian beliau adalah di bawah tajaan Jabatan Perkhidmatan Awam Malaysia. Beliau masakini berada di Malaysia untuk mencari maklumat serta bahan-bahan untuk penyelidikannya. Disamping itu beliau bercadang untuk membuat suatu survey di kalangan pesawah-pesawah padi di kawasan Krian, Perak. Kajian yang hendak dijalankannya ialah untuk mengetahui kesan rancangan bantuan subsidi Kerajaan terhadap produktiviti serta taraf hidup pesawah-pesawah padi.

Sehubungan dengan ini, saya akan merasa amat sukacita jika pihak tuan dapat memberi kerjasama serta bantuan kepada Encik Ahmad Rusli dalam usahanya itu.

Sekian, terima kasih.

Yang benar,

(KHALID BIN HJ. HUSIN)
Ketua Pengarah.

APPENDIX 3

A STUDY ON THE EFFECT OF SUBSIDIES ON SMALLHOLDERS

INFORMATION ON SMALLHOLDER:

NAME: .....

ADDRESS: .....

.....

.....

AREA: .....

1 : INFORMATION OF SMALLHOLDER

1. How old are you ? ..... years

2. How long did you attend school ? ..... years

3. Are you a member of the S/H Development Centre ? Yes / No

4. If not please give your reason.
   - Don't anticipate any benefit = 1
   - Others = 2

5. Is rubber tapping your main occupation ? Yes / No

6. If yes, what other jobs do you do ?
   - None = 1
   - Other agriculture = 2
   - Petty business = 3
   - Fruit cultivation = 4
   - Others = 5

7. If not, what is your main occupation ?
   - Other agriclture = 1
   - Carpenter = 2
   - Government job = 3
   - Others = 4

8. How long have been a tapper? ..... years

2 : INFORMATION ON FAMILY MEMBERS

9. How many people are staying with you ? .....

10. How many of them help you in the field ? .....

11. How many of your dependents are still schooling ? .....

3: INFORMATION ON LAND HOLDINGS

12. Please give some information of the land you own.

No.	Acre	Type of Crop	Total land
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

13. Please give details of the rubber land that you tap.

No.	Category of land	1978	1986
A.	Own land	..... acre	.....
a.	Operate yourself	.....	.....
b.	Rent out	.....	.....
c.	Left idle	.....	.....
B.	Rented land		
a.	Acre you rent	.....	.....

14. If you rented out your land, how much rent did you charge ?
M$ .....per month

15. If you rented or leased somebody's land, how much rent did you pay ?
M$ .....

16. How much land tax do you pay per year ? M$ ..... / acre

4 : INFORMATION ON AGRICULTURAL INPUTS

17. Have you replanted all your rubber trees ? Yes / No

18. If not how many acres are still not replanted ? .....acres

19. If you have replanted before, please give the following information.

Date Replanted	Acres	Type of Crop
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

20. How much did you spend on the following ?
Replanting cost M$ ..... / acre
Replanting grant M$ ..... / acre

21. Please give information on labour usage in undertaking replanting work.

Type of Work	Type of Labour	Hours	Wage(M$/acre)

a. Felling	.....	.....	.....
b. Holing	.....	.....	.....
c. Planting	.....	.....	.....
d. Poisoning	.....	.....	.....
d. Fertilising	.....	.....	.....
e. Tapping	.....	.....	.....
f. Processing	.....	.....	.....
g. Total	.....	.....	.....

Labour code: Family labour = 1
Hired labour = 2
Others = 3

5: INFORMATION ON PRODUCTION

22. How many days do you tap your trees per month ? ..... days

23. How much production did you get from your trees before and after you replanted your trees ?
Before replanting ..... kg / day / month
After replanting ..... kg / day / month

24. How many years did it take for your trees to mature ? .....

25. In what form do you sell your rubber ?
Latex = 1
Scrap = 2
Unsmoked sheet(USS) = 3
Cup lump = 4

26. If you sell in USS form, please state your reason for doing so.
Get better prices = 1
Easy to transport = 2
Others = 3

27. If you sell in latex form, please state your reason for doing so.
MARDEC make regular purchases = 1
Easier work & save time = 2
Others = 3

28. To whom do you usually sell your rubber ?
Middlemen = 1
MARDEC = 2
RISDA = 3
Others = 4

29. If you sell to the middlemen, please state the reason.
Have credit arrangement = 1
Convenient = 2
Prices are higher = 3
Others = 4

30. If you sell your rubber to a government agency, please state your reason.

Prices stable & fixed = 1
Transport facilities provided = 2
No other buyers = 3
Others = 4

31. What was the average price of rubber that you got last month ?
M$ ..... / kg

32. What is your total income from rubber tapping ? M$ .....p.m.

6 : INCOME AND EXPENDITURE

33. Please give details of your monthly expenditure as follows.

i.	Food expenditure	M$ .....
ii.	Schooling expenditure	M$ .....
iii.	Transportation	M$ .....
iv.	Utilities	M$ .....
v.	Others (specify)	M$ .....
vi.	Total Expenditure	M$ .....

34. Do you think your income position has improved after you replanted your rubber? Yes / No

35. Please state the sources of your income (if any) as follows :

	Sources	Amount (M$) / month
i.	Wage income	.....
ii.	Other agriculture	.....
iii.	Pension	.....
iv.	Remittances from children	.....
v.	Rental income	.....
vi.	Others (specify)	.....
vii.	Total non-rubber income	.....
viii.	Rubber income	.....
ix.	Gross income	.....

36. Please indicate when you spent on the following items.

	Items	< Replant	> Replant
i.	T.V.	.....	.....
ii.	Radio	.....	.....
iii.	Bicycle	.....	.....
iv.	Motorcycle	.....	.....
v.	Motorcar	.....	.....
vi.	Pilgrimage to Mekah	.....	.....
vii.	Renovate house	.....	.....
viii.	Others	.....	.....

7 : SAVINGS

37. Do you have any savings ? Yes / No

38. If yes, please state where you put your savings and amount

kept.

Place	< 1980	> 1980
i. National Savings Bank	.....	.....
ii. Pilgrimage Funds Board	.....	.....
iii. Commercial Banks	.....	.....
iv. Amanah Saham Nasional	.....	.....
v. Others	.....	.....

39. If you did not save or invest, state the reason.
No extra income to save = 1
To avoid incurring interest = 2
Didn't know how to go about = 3

8 : LOANS AND CREDIT

40. Did you make any production loans ? Yes / No

41. If yes, aftervyou replanted did the loan increase ? Yes / No

42. How much loan did you make ? M$ .....

43. Please state from which source did you borrow from ?
Commercial banks = 1
Middlemen = 2
Relatives = 3
Others = 4

9 : ATTITUDE OF SMALLHOLDERS ON REPLANTING SCHEME AND EFFECT OF THE SCHEME ON RUBBER PRODUCTION

44. Have you benefited from the rubber replanting scheme ? Yes / No

45. How have you benefited ?
Increase income = 1
Increase yield = 2

46. Do you think that the replanting assistance should continue ?
Yes / No

47. If yes, why do you think so ?
Smallholders need this help = 1
Smallholders' right = 2
Others = 3

48. Do you think that replanting assistance should continue in the form of cash and material as at present ? Yes / No

49. If not, how should it be given ?
Cash only = 1
Material only = 2
Others = 3

50. Do you feel that the materials provided by RISDA under the

replanting asssitance are of good quality ?

i.	Seedlings	Yes / No
ii.	Fertiliser	Yes / No
iii.	Poison	Yes / No
iv.	Others	Yes / No

51. Do you agree if the government were to reduce the amonut of replanting assistance ? Yes / No

52. If not why not ?

.....
.....
.....

53. If the amount of replanting grants were to be reduced, would you continue to cultivate rubber ? Yes / No

54. If not what would you do ?

Find other job	= 1
Plant other crop	= 2
Sell land	= 3
Rent out land	= 4

55. Do you think that the amount of replanting grant which you received reasonable ? Yes / No

56. If not, what rate would you recommend ? M$ ..... / acre

57. Are you happy with the way RISDA is administering the replanting programme ? Yes / No

58. If not state the reasons.

.....
.....
.....

59. What problems did you face when you replanted your trees ?

Wild animals	= 1
Lack finance	= 2
No labour	= 3
Others	= 4

60. Do you know from where the replanting grant comes from ? Yes/No

61. Please mention what made you decide to replant your trees.

Amount of replanting grant offered	= 1
Size of holdings	= 2
No labour constraint	= 3
Others	= 4

9: ATTITUDE OF SMALLHOLDERS TOWARDS SUBSIDIES

62. Did you receive the following assistance ?

i.	SEPENTAS	Yes / No
ii.	Cover crop credit	Yes / No
iii.	Others	Yes / No

63. Did you get any benefit from these assistance programme? Yes/ No

64. Have you heard abuses in the administration of the replanting programme? Yes / No

65. If yes, what were they ?

.....
.....
.....

66. Do you think you can be self-reliant with minimal government assistance? Yes / No

67. Do you think that your self-reliant spirit is affected by the presence of subsidies ? Yes / No

68. Why do you say that your spirit of self-reliance is not affected by the presence of subsidies ?

Subsidies is an incentive to work hard = 1
Subsidies help to reduce farmers' burden = 2
Others (specify) = 3

69. Why do you think the government says that farmers have a " subsidy mentality " ?

So that more farmers would become self-reliant = 1
A government warning that subsidies will be phased out = 2
So that farmers should use subsidies more effectively = 3

70. Please state whether or not you agree with the following statements on the concept of " subsidy mentality ".(SM)

Views	Agree	Disagree
i. SM exists due to poverty	.....	.....
ii. Farmers face difficulty if no subsidy	.....	.....
iii. SM exists due to government patronage	.....	.....
iv. Subsidies should be used to help poor	.....	.....
v. Subsidies are no guarantee to better life	.....	.....

APPENDIX 4

A STUDY ON THE EFFECT OF SUBSIDIES ON FARMERS

INFORMATION ON FARMER:

NAME: .....

ADDRESS: .....

.....

.....

AREA: .....

1 : INFORMATION OF FARMERS

1. How old are you ? ..... years

2. How long did you attend school ? ..... years

3. Are you a member of the Farmer's Association ? Yes / No

4. If not please give your reason.
   Don't anticipate any benefit = 1
   Others = 2

5. Is padi farming your main occupation ? Yes / No

6. If yes, what other jobs do you do ?
   None = 1
   Other agriculture = 2
   Petty business = 3
   Fruit cultivation = 4
   Others 5

7. If not, what is your main occupation ?
   Other agriclture = 1
   Carpenter = 2
   Government job = 3
   Others = 4

8. How long have been a farmer ? ..... years

2 : INFORMATION ON FAMILY MEMBERS

9. How many people stay with you ? .....

10. How many of them help you in the field ? .....

11. How many of your dependents are still schooling ? .....

3: INFORMATION ON LAND HOLDINGS

12. Please give some information on the land you own.

No.	Acre	Type of Crop	Total land
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

13. Please give details of the farm land you work in main seasons.

No.	Category of land	1978	1986
a.	Own land	..... acre	.....
i.	Operate yourself	.....	.....
ii.	Rent out	.....	.....
iii.	Left idle	.....	.....
b.	Rented land		
i.	Acre you rent	.....	.....

14. If you rented out your land, how much rent did you charge per season ?

M$ .....

15. If you rented or leased somebody's land, how much rent did you pay ?

M$ .....

16. How much land tax did you pay in 1978 and 1986 per acre per year ?

1978 ..... M$ .....
1986 ..... M$ .....

4 : INFORMATION ON AGRICULTURAL INPUTS

17. Select the main type of padi you planted.

Type	1978(MS)	1986(MS)
Seribu Gantang	1	1
Anak Dara	2	2
MR1 (Setanjung)	3	3
MR7 (Sekincan)	4	4
MR77	5	5
Other MR type	6	6
Mat Candu	7	7
Bahagia	8	8
Others (to specify)	9	9

18. Where did you get padi seedlings ?
Own stock 1
Others - 2

19. How much seedlings did you use per acre ?
1978 Main-season ..... gantang / acre
1986 Main-season ..... gantang / acre

20. How much was the cost of seedlings per gantang ?
1978 Main-season M$ .....
1986 Main-season M$ .....

21. Did you use any fertiliser ?
1978 Main-season Yes / No
1986 Main-season Yes / No

22. If yes, how did you get the fertiliser ?

	1978	1986
Free from fertiliser subsidy scheme	= 1	1
Bought from shop	= 2	2
Others (to specify)	= 3	3

23. If you bought fertiliser yourself, please give the following details.

Main-season	No. of bags	Price/bag	Total expenditure(M$)
1978	.....	.....	.....
1986	.....	.....	.....

24. Did you use any pesticide ?
1978 Main-season Yes / No
1986 Main-season Yes / No

5. How much did you spend on pesticide expenditure per acre ?
1978 Main-season M$ ...../ acre
1986 Main-season M$ ...../ acre

26. Did you use any weedicide ?
1978 Main-season Yes / No
1986 Main-season Yes / No

27. How much did you spend on weedicide expenditure per acre ?
1978 Main-season M$ .....
1986 Main-season M$ .....

28. Please give details on the various activities in padi cultivation.

Activity	Type of Labour	Hours	Wage(M$) / acre 1978	1986
Prepare field	.....	.....	.....	.....
Weeding	.....	.....	.....	.....
Planting	.....	.....	.....	.....
Fertilising	.....	.....	.....	.....
Poisoning	.....	.....	.....	.....
Harvesting	.....	.....	.....	.....
Processing	.....	.....	.....	.....

Type of labour code : Family labour = 1
Hired labour = 2
Cooperative labour = 3

29. Do you use tractors to prepare your land ?
1978 Main-season Yes / No
1986 Main-season Yes / No

30. If yes, where did you get the tractor from ?

	1978	1986
Own tractor =	1	1
Rent =	2	2
Others	3	3

31. If rent, how much was the rental per acre ?
1978 M$ .....
1986 M$ .....

32. Did you a combine harvester when harvesting your crop ?
1978 Main-season Yes / No
1986 Main-season Yes / No

33. If yes, how much was the rental per acre ?
1978 Main-season M$ .....
1986 Main-season M$ .....

5 : INFORMATION ON PADI PRODUCTION

34. How much production did you get from your land in following seasons ?
1978 Main-season ..... kg. / acre
1986 Main-season ..... kg. / acre

35. Did you sell any of your padi ?
1978 Main-season Yes / No
1986 Main-season Yes / No

36. Please state total amount of padi you use for the following purpose.

No.	Purpose	1978 Main-season	1986 Main-sason
i.	Sale in market	..... sacks	..... sacks
ii.	Zakat(tithe)	..... sacks	..... sacks
iii.	Home consumption	..... sacks	..... sacks
iv.	Others	..... sacks	..... sacks

1 sack = ... kg / pikul
1 acre = ... sacks

37. To whom did you sell your padi ?

Source	1978	1986
Middlemen	.....	.....
LPN	.....	.....
Licensee	.....	.....
Others	.....	.....

38. If you sell to the middlemen, please state the reason.

Reason	1978	1986
Have credit arrangement	.....	.....
Convenient	.....	.....
Prices are higher	.....	.....
Others	.....	.....

39. If you sell your padi to LPN / agents, state your reasons.

Reasons	1978	1986
Prices are better	.....	.....
No choice	.....	.....
Others	.....	.....

40. What was the price paid to you including the price subsidy ?

1978 Main-season M$ ..... / 100 kg. / pikul
1986 Main-season M$ ..... / 100 kg. / pikul

41. How much cost was involved in marketing your crop ?

Activity	1978(M$)	1986(M$)
i. Transport within padi field	M$	M$..... / sack
ii. Transport outside padi field	M$	M$ ..... / sack
iii. Total cost	M$	M$ .... / acre

6 : INCOME AND EXPENDITURE

42. Please give details of your monthly expenditure as follows.

i. Food expenditure M$ .....
ii. Schooling expenditure M$ .....
iii. Transportation M$ .....
iv. Utilities M$ .....
v. Others (specify) M$ .....
vi. Total Expenditure M$ .....

43. Do you think your income position has improved with the introduction of government subsidy programmes ? Yes / No

44. Please state the sources of your income as follows :

Sources	Amount (M$) / month
i. Wage income	.....
ii. Other agriculture	.....
iii. Pension	.....
iv. Remittances from children	.....
v. Rental income	.....
vi. Others (specify)	.....
vii. Total non-farm income	.....
viii. Farm income	.....
ix. Gross income	.....

45. Please indicate when you spent on the following items.

Items	< 1980	> 1980
i. T.V.	.....	.....
ii. Radio	.....	.....
iii. Bicycle	.....	.....
iv. Motorcycle	.....	.....

v. Motorcar	.....	.....
vi. Pilgrimage to Mekah	.....	.....
vii. Renovate house	.....	.....
viii. Others	.....	.....

7 : SAVINGS

46. Do you have any savings ? Yes / No

47. If yes, please state where you put your savings and amount kept.

Place	< 1980	> 1980
i. National Savings Bank	.....	.....
ii. Pilgrimage Funds Board	.....	.....
iii. Commercial Banks	.....	.....
iv. Amanah Saham Nasional	.....	.....
v. Others	.....	.....

48. After the subsidy scheme was launched, did you manage to increase your savings ? Yes / No / No change

49. If you did not save or invest, state the reason.

No extra income to save = 1
To avoid incurring interest = 2
Didn't know how to go about = 3

8 : LOANS AND CREDIT

50. Did you make any production loans ?

1978 (MS) Yes / No
1986 (MS) Yes / No

51. If yes, since the subsidy scheme was launched in 1979, was your loan,

Increased = 1
Decreased = 2
No change = 3

52. How much loan did you make ?

1978 (MS) M$ .....
1986 (MS) M$ .....

53. Please state from which source did you borrow from ?

Commercial banks = 1
Middlemen = 2
Relatives = 3
Others = 4

9 : ATTITUDE OF FARMERS TOWARDS PADI SUBSIDY SCHEME AND EFFECT OF SUBSIDY ON PRODUCTION OF PADI

54. Did you receive free fertiliser from the government ? Yes / No

55. If yes, what was the quality of the fertiliser good ?

Good	= 1
Bad	= 2
Satisfactory	= 3

56. If the quality of the free fertiliser was bad, state the reason.

Fertiliser was soft	= 1
Fertiliser from old stock	= 2
Fertiliser moist	= 3
Fertiliser adulterated	= 4
Others	= 5

57. Did you face any difficulty in getting free supplies of fertiliser ?

Yes / No

58. If yes, state the problems faced.

.....

.....

59. Please state whether you agree or disagree with the following statements on the supply of fertilisers.

Statement	Agree	Disagree
a. Distribution point of supply far from field	.....	.....
b. Inadequate supply of fertiliser	.....	.....
c. Delay to get fertiliser at the stipulated time	.....	.....
d. Fertiliser received less than amount eligible	.....	.....

60. Do you feel that fertiliser subsidy has benefited you ? Yes/No

61. If yes, how have it benefited you ?

Forgo fertiliser expenfiture	= 1
Increase padi yield	= 2

62. Do you think that the fertiliser subsidy scheme should continue?

Yes / No

63. What form do you think the fertiliser subsidy scheme take ?

In kind (as at present)	= 1
Cash	= 2
Others	= 3

64. If fertiliser subsidy were to be withdrawn by the government, what would be your response ?

Continue to plant padi	= 1
Stop planting padi	= 2

65. Do you think that fertiliser is properly utilised by farmers in Krian ?

Yes / No

66. If no, why do you say so ?
Farmers resold fertiliser tothird party = 1
Farmers applied fertiliser to other crops = 2
Others = 3

67. How do you propose to te government to stop these abuses ?
LPP show farmers coreect way to use fertiliser = 1
LPP should monitor fertiliser use = 2
Government should prosecute offenders in court = 3

10: ATTIITUDE OF FARMERS TOWARDS PADI PRICE SUBSIDY

68. Have you benefited from the padi price subsidy ? Yes / No

69. How have you benefited ?
Increase income = 1
Others = 2

70. How long did you have to wait before you are able to cash your coupon ?
1 - 2 days = 1
3 - 5 days = 2
6 - 7 days = 3
> 7 days = 4

71. Please give your response to the following statements on the administration of the padi price subsidy

Statement	Satisfied	Not satisfied
i. Coupon issued to buyers of padi	.....	.....
ii. Moisture deductions by buyers	.....	.....
iii. Details of purchase in receipt	.....	.....

72. Have you heard any case of abuse in the administration of price subsidy?
Yes / No

73. If yes, please state the kind of abuse that you have heard.
Farmers collaborating with buyers = 1
Buyers collaborating with millers = 2
Millers collaborating with LPN staff = 3
Others = 4

74 What would you do if price subsidy were to increase by 100 % ?
Increase padi area = 1
Reduce padi area = 2
No change = 3
Others = 4

75. What would you do if price subsidy were to decrease by 50 % ?
Increase padi area = 1
Reduce padi area = 2
No change = 3
Others = 4

76. Would you increase your market surplus if price subsidy were to increase ?

Yes / No

77. What would you propose to do if price subsidy were to be withdrawn ?

Find alternative job	= 1
Continue to plant padi	= 2
No change in acreage	= 3
Plant padi for own consumption	= 4
Others	= 5

78. Do you agree if price subsidy is given based on actual output rather on amount sold in the market ? Yes / No

79. If yes, why do you say so ?

Farmers able to get more subsidy	= 1
Farmers get subsidy even for padi not sold	= 2
Govt. able to avoid cheating by middlemen	= 3

80. Please state your choice whether you would prefer a price increase or a subsidy increase for padi.

Increase padi price	= 1
Increase price subsidy	= 2
Indifferent	= 3

81. What is the rate of price subsidy that you would consider reasonable ?

M$20.00 / 100 kg	= 1
M$25.00 / 100 kg	= 2
M$55.00 / 100 kg	= 3

11 : GENERAL ATTITUDES OF FARMERS TO SUBSIDIES

82. Do you think that you can plant padi successfully without subsidies ?

Possible	= 1
Not possible	= 2

83. Do you think you can be self-reliant with minimal government assistance?

Yes / No

84. Do you think that your self-reliant spirit is affected by the presence of subsidies ? Yes / No

85. Why do you say that your spirit of self-reliance is not affected by the presence of subsidies ?

Subsidies is an incentive to work hard	= 1
Subsidies help to reduce farmers' burden	= 2
Others (specify)	= 3

86. Why do you think the government says that farmers have a " subsidy mentality " ?

So that more farmers would become self-reliant = 1
A government warning that subsidies will be phased out = 2
So that farmers should use subsidies more effectively = 3

87. Please state whether or not you agree with the following statements on the concept of " subsidy mentality ".(SM)

Views	Agree	Disagree
i. SM exists due to poverty	.....	.....
ii. Farmers face difficulty if no subsidy	.....	.....
iii. SM exists due to government patronage	.....	.....
iv. Subsidies should be used to help poor	.....	.....
v. Subsidies are no guarantee to better life	.....	.....

APPENDIX 5

```
RATSSM Version 1.12.  12/30/84
  Copyright (C) 1984 by VAR Econometrics
open data b:yazmin
calender 1968 1  1
allocate 0 1986,1
data 1968,1  1986,1 REPHA PROD SUBSIDY REGRANT YPH RUBBERP
print(dates) 1968,1  1986,1 REPHA PROD SUBSIDY REGRANT YPH RUBBERP
set REPHA 1968,1 1986,1 = log(REPHA(t))
set PROD 1968,1 1986,1 = log(PROD(t))
set SUBSIDY 1968,1 1986,1 = log(SUBSIDY(t))
set REGRANT 1968,1 1986,1 = log(REGRANT(t))
set YPH 1968,1 1986,1 = log(YPH(t))
set RUBBERP 1968,1 1986,1 = log(RUBBERP(t))
OLS REPHA 1969,1 1986,1
# CONSTANT REGRANT SUBSIDY -RUBBERP 1 1
DEPENDENT VARIABLE     1     REPHA
FROM 1969- 1 UNTIL 1986- 1
OBSERVATIONS            18     DEGREES OF FREEDOM     14
R**2             .50568161     RBAR**2          .39975624
SSR           .88385881        SEE           .25126236
DURBIN-WATSON  1.21140261
Q(    9)=    11.8312        SIGNIFICANCE LEVEL  .222996
NO.     LABEL     VAR  LAG    COEFFICIENT    STAND. ERROR    T-STATISTIC
***     *******   ***  ***    ************   ************   ************
  1     CONSTANT    0    0    4.479167        1.681620        2.663603
  2     REGRANT     4    0    .6101526        .4222102        1.445037
  3     SUBSIDY     3    0    .3843728        .1649373        2.330410
  4     RUBBERP     6    1   -.6862474        .2971389       -2.309517

END

        NORMAL COMPLETION OF JOB
                HALT AT    0
                  0 ERRORS        0 WARNINGS
```

```
RATSSM Version 1.12.  12/30/91
  Copyright (C) 1991 by VAR Econometrics
open data b:yo.mrw
calendar 1968 1  1
allocate 0 1986,1
data 1968,1  1986,1 REPHA PROD SUBSIDY REGRANT YPH RUBBERP
print(dates) 1968,1  1986,1 REPHA PROD SUBSIDY REGRANT YPH RUBBERP
set REPHA 1968,1 1986,1 = log(REPHA(t))
set PROD 1968,1 1986,1 = log(PROD(t))
set SUBSIDY 1968,1 1986,1 = log(SUBSIDY(t))
set REGRANT 1968,1 1986,1 = log(REGRANT(t))
set YPH 1968,1 1986,1 = log(YPH(t))
set RUBBERP 1968,1 1986,1 = log(RUBBERP(t))
OLS YPH 1969,1 1986,1
# CONSTANT REGRANT SUBSIDY -RUBBERP 1 1 REPHA
DEPENDENT VARIABLE    5     YPH
FROM 1969- 1 UNTIL 1986- 1
OBSERVATIONS           18     DEGREES OF FREEDOM     13
R**2            .64054229     RBAR**2          .52993092
SSR          .17635747        SEE           .11647300
DURBIN-WATSON    .95712222
Q(   9)=   7.11104       SIGNIFICANCE LEVEL  .625560
NO.     LABEL     VAR  LAG    COEFFICIENT   STAND. ERROR    T-STATISTIC
***     *******   ***  ***   ************   ************   ************
  1     CONSTANT    0    0   6.255334        .9568615        6.537345
  2     REGRANT     4    0  -.4914625       .2098197       -2.342309
  3     SUBSIDY     3    0  -.1246391       .9007379E-01   -1.383745
  4     RUBBERP     6    1   .5270666       .1618649        3.256213
  5     REPHA       1    0  -.9701217E-01   .1238893       -.7830553
END

        NORMAL COMPLETION OF JOB
                HALT AT    0
                  0 ERRORS        0 WARNINGS
```

```
RATS'84 Version 1.12   12/30/84
  Copyright (C) 1984 by VAR Econometrics
open data b:yuzmio
calendar 1968 1  1
allocate 0 1986,1
data 1968,1  1986,1 REPHA PROD SUBSIDY REGRANT YPH RUBBERP
print(dates) 1968,1  1986,1 REPHA PROD SUBSIDY REGRANT YPH RUBBERP
set REPHA 1968,1 1986,1 = log(REPHA(t))
set PROD 1968,1 1986,1 = log(PROD(t))
set SUBSIDY 1968,1 1986,1 = log(SUBSIDY(t))
set REGRANT 1968,1 1986,1 = log(REGRANT(t))
set YPH 1968,1 1986,1 = log(YPH(t))
set RUBBERP 1968,1 1986,1 = log(RUBBERP(t))

OLS PROD 1969,1 1986,1
# CONSTANT REGRANT  RUBBERP 1 1 YPH REPHA
 DEPENDENT VARIABLE     2     PROD
FROM 1969- 1 UNTIL 1986- 1
OBSERVATIONS            18     DEGREES OF FREEDOM      13
R**2              .90677942     RBAR**2          .87809616
SSR           .69033073E-01     SEE           .72871369E-01
DURBIN-WATSON  1.12035191
Q(   9)=   17.3901        SIGNIFICANCE LEVEL  .429455E-01
NO.     LABEL     VAR  LAG    COEFFICIENT   STAND. ERROR    T STATISTIC
***     *******   ***  ***   ************   ************   ************
  1     CONSTANT    0    0  -2.304392        .9393603       -2.453150
  2     REGRANT     4    0   .2065432        .1465787        1.409091
  3     RUBBERP     6    1  -.3028318E-01    .1363119       -.2221610
  4     YPH         5    0   1.188842        .1620032        7.338386
  5     REPHA       1    0   .1001047        .6580172E-01    1.521309

END


          NORMAL COMPLETION OF JOB
                  HALT AT    0
                     0 ERRORS        0 WARNINGS
```

LS // Dependent Variable is LX3
Date: 7-12-1990 / Time: 16:17
SMPL range: 1965 - 1986
Number of observations: 22

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	0.4337850	0.6041009	0.7180671	0.484
LX6	0.9472793	0.0714012	13.266992	0.000
LX7	0.0096863	0.0247854	0.3908053	0.701
LX8	0.0738151	0.0386515	1.9097593	0.075
LX11	0.9458410	0.0970402	9.7468999	0.000
LX12	-0.0678473	0.0919249	-0.7380726	0.472
LX13	-0.0198888	0.0122369	-1.6253129	0.125

R-squared	0.984551	Mean of dependent var	7.280013
Adjusted R-squared	0.978372	S.D. of dependent var	0.196208
S.E. of regression	0.028856	Sum of squared resid	0.012490
Durbin-Watson stat	2.642978	F-statistic	159.3235
Log likelihood	50.99616		

Do you want to see the Covariance Matrix ? (P,S,—┘)

Covariance Matrix

C,C	0.364938	C,LX6	-0.028012
C,LX7	0.001744	C,LX8	-0.009391
C,LX11	0.017662	C,LX12	-0.038730
C,LX13	-0.002090	LX6,LX6	0.005098
LX6,LX7	-0.001053	LX6,LX8	0.001523
LX6,LX11	-0.002680	LX6,LX12	-0.000529
LX6,LX13	0.000278	LX7,LX7	0.000614
LX7,LX8	-0.000514	LX7,LX11	0.000109
LX7,LX12	0.000889	LX7,LX13	-0.000114
LX8,LX8	0.001494	LX8,LX11	-0.002470
LX8,LX12	-5.58D-05	LX8,LX13	-4.54D-05
LX11,LX11	0.009417	LX11,LX12	-0.000643
LX11,LX13	0.000103	LX12,LX12	0.008450
LX12,LX13	8.58D-05	LX13,LX13	0.000150

LS // Dependent Variable is LX11
Date: 7-12-1990 / Time: 16:04
SMPL range: 1965 - 1986
Number of observations: 22

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	0.6670473	1.1453893	0.5823761	0.568
LX7	0.0312055	0.0461755	0.6758022	0.509
LX8	0.2254041	0.0619629	3.6377275	0.002
LX12	-0.0933690	0.2279956	-0.4095212	0.688
LX13	-0.0377174	0.0265240	-1.4220094	0.174
DX1	-0.1926914	0.0742567	-2.5949364	0.020

R-squared	0.717935	Mean of dependent var	1.072767
Adjusted R-squared	0.629789	S.D. of dependent var	0.111152
S.E. of regression	0.067630	Sum of squared resid	0.073181
Durbin-Watson stat	1.805079	F-statistic	8.144897
Log likelihood	31.54778		

Do you want to see the Covariance Matrix ? (P,S,—!)

Covariance Matrix

C,C	1.311917	C,LX7	-0.025028
C,LX8	0.000347	C,LX12	-0.258842
C,LX13	-0.004617	C,DX1	-0.029579
LX7,LX7	0.002132	LX7,LX8	-0.001664
LX7,LX12	0.004754	LX7,LX13	-0.000211
LX7,DX1	0.000694	LX8,LX8	0.003839
LX8,LX12	-0.001019	LX8,LX13	-0.000437
LX8,DX1	-0.000486	LX12,LX12	0.051982
LX12,LX13	0.000993	LX12,DX1	0.005962
LX13,LX13	0.000704	LX13,DX1	0.000190
DX1,DX1	0.005514		

```
MAT32M Version 1.12    12/30/91
  Copyright (c) 1991 by VAR Econometrics
open data b:REPHA
allocate 0 87
data(org=var) 1 87 YPH REPHA AGETAP TAPDAY TASKSIZ GROSSYL  $
RUBBERP HOUSIZE REPYEAR AGESH GROSSIN UNREPHA WEXP DUMMY1  $
DUMMY2 DUMMY3 REGRANT TOTHA DUMMY4
print(dates) 1 87 YPH REPHA AGETAP TAPDAY TASKSIZ GROSSYL  $
RUBBERP HOUSIZE REPYEAR AGESH GROSSIN UNREPHA WEXP DUMMY1  $
DUMMY2 DUMMY3 REGRANT TOTHA DUMMY4
set YPH 1 87 = log(YPH(t))
set AGETAP 1 87 = log(AGETAP(t))
set TAPDAY 1 87 = log(TAPDAY(t))
set TASKSIZ 1 87 = log(TASKSIZ(t))
set GROSSYL 1 87 = log(GROSSYL(t))
set RUBBERP 1 87 = log(RUBBERP(t))
set HOUSIZE 1 87 = log(HOUSIZE(t))
set REPYEAR 1 87 = log(REPYEAR(t))
set AGESH 1 87 = log(AGESH(t))
set GROSSIN 1 87 = log(GROSSIN(t))
set WEXP 1 87 = log(WEXP(t))
set REGRANT 1 87 = log(REGRANT(t))
set TOTHA 1 87 = log(TOTHA(t))
ols(vcv) REPHA 1 87
# CONSTANT AGESH RUBBERP YPH HOUSIZE REGRANT TOTHA DUMMY4

DEPENDENT VARIABLE     2     REPHA
OBSERVATIONS           87    DEGREES OF FREEDOM     79
R**2            .73784534    RBAR**2          .71461644
SSR           7.7763610      SEE              .31374344
DURBIN-WATSON  2.06188879
Q(  27)=   31.8019       SIGNIFICANCE LEVEL  .239502

NO.    LABEL     VAR  LAG   COEFFICIENT    STAND. ERROR    T-STATISTIC
***    *******   ***  ***   ************   ************   ************
  1    CONSTANT    0    0    4.170138       1.920943        2.170881
  2    AGESH      10    0   -.7790035E-01   .1885602       -.4131325
  3    RUBBERP     7    0   -.7943829E-01   .1487327       -.5341010
  4    YPH         1    0   -.8043005E-01   .8217645E-01   -.9787481
  5    HOUSIZE     8    0   -.6841280E-01   .7839025E-01   -.8727207
  6    REGRANT    17    0   -.4134518       .2019525       -2.047272
  7    TOTHA      18    0    .8950498       .6329635E-01    14.14062
  8    DUMMY4     19    0   -.6840317       .8592694E-01   -7.960620
END


        NORMAL COMPLETION OF JOB

              HALT AT    0

                0 ERRORS        0 WARNINGS
```

STATISTICAL APPENDIX FOR CHAPTER 5

Expenditure on Agricultural Subsidies in P. Malaysia, '73-77(M$m)

Type of Subsidy	1973	1974	1975	1976	1977
1. Replanting Grants					
1.1 Rubber:					
1.1.1 Rubber replanting & new planting	84.3	77.9	108.6	81.7	67.2
Research cess	32.3	32.7	31.2	34.5	34.5
1.1.2 RISDA administration	11.1	19.2	25.1	28.9	37.5
1.2 Coconuts	2.7	2.4	3.7	4.2	4.9
1.3 Pineapples	0.6	1.5	2.0	2.0	2.3
2. Input Subsidies					
2.1 Urea	-	26.8	4.2	-	-
2.2 Short term crops:					
2.2.1 DOA	3.5	4.6	2.8	4.2	7.5
2.2.2 FOA	-	3.9	10.3	9.2	10.9
2.3 Credit: BPM Programmes	-	-	30.0	-	-
2.4 Fishing:					
2.4.1 Fisheries Division	1.5	3.6	4.2	1.3	6.1
2.4.2 MAJUIKAN	0.1	0.6	0.3	0.3	1.3
2.5 Livestock (smallholders):					
2.5.1 beef and dairy	1.4	1.4	1.4	4.3	4.3
2.5.2 other livestock	0.3	0.3	0.3	1.6	1.6
2.6 Livestock (other):					
2.6.1 development grants to MAJUTERNAK	4.9	5.5	5.5	1.8	3.2
2.6.2 operating grants to MAJUTERNAK	0.2	2.0	3.3	4.7	5.2
3.0 Drainage and Irrigation					
3.1 Capital	35.1	41.1	45.7	51.5	62.1
3.2 Operating & Maintenance:					
3.2.1 irrigation	8.5	7.4	7.8	13.2	16.8
3.2.2 drainage	0.5	1.4	1.8	1.9	1.7
4.0 Price Support					
4.1 Padi (LPN):					
4.1.1 development	9.5	16.0	4.5	20.8	7.0
4.1.2 trading	23.0	25.0	50.0	39.7	115.8
5.0 Tax Exemptions					
5.1 Sugar	2.6	2.1	7.4	7.4	9.4
6.0 Other Subsidies					
6.1 Rubber Marketing: MARDEC capital	-	15.5	-	-	-
6.2 Marketing: FAMA	-	0.6	0.8	0.3	0.3
6.3 Land development:					
6.3.1 FELDA	16.1	21.2	33.2	31.7	43.9
6.3.2 FELCRA	5.2	6.9	5.1	7.0	9.2
6.3.3 RISDA block planting	3.8	11.2	12.9	15.4	16.6
Total Subsidies	247.2	330.8	402.1	367.6	469.3

Source: Kelim (1980), pp. 53-55

STATISTICAL APPENDIX FOR CHAPTER 6

TABLE 1: Rubber S/H Inside and Outside Land Development Scheme, 1977

Item	No.	%	Ha.	%
Estimated No. of S/H	490,460	100	1,360,769	100
No. of S/H in Land Schemes	22,490	4.6	144,326	10.6
No. of S/H outside Schemes	467,970	95.4	1,216,443	89.4

Note: Land schemes refer to FELDA & FELCRA type
Source: RISDA (1983), Table 1.2, p.13

TABLE 2: Rubber Smallholders Between 1961 and 1977, P. Malaysia

Year	No.	Ha.	Ave. Size(ha)
1961	284,565	819,041	2.9
1973	424,846	1,104,600	2.6
1977	490,460	1,158,451	2.4

Source : RISDA (1983)

TABLE 3: No. of Smallholders by Sex & Race, 1977, P. Malaysia

Sex	Bumiputra		Chinese		Indian		Others		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
M	251,808	69	81,147	71	4580	72	2981	72	340,516	69.4
F	113,942	31	33,621	29	1226	21	1155	28	149,944	30.6
Tot	365,750	75	114,768	23	5806	1	4136	0.8	490,460	100

Source : RISDA (1983), Table 2.1, p. 21

TABLE 4: Area of Holdings By Sex and Race, 1977, P. Malaysia

Sex	Bumiputra		Chinese		Indian		Others		Total	
	Ha.	%	Ha.	%	Ha.	%	Ha.	%	Ha.	%
M	541,992	-	294,262	-	14,110	-	7,172	-	857,536	74
F	188,741	-	106,760	-	3,015	-	2,399	-	300,451	26
Tot	730,733	63	401,022	35	17,124	2	9,571	0.8	1,156,451	100

Source: RISDA (1983), Table 2.2, p. 23

TABLE 5: No. of S/H by Age Category and Race, 1977, P. Malaysia

Age Cat. (years)	Bumiputra		Chinese		Indian		Others		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
15-29	21,086	6	9,129	8	437	8	352	9	31,004	6
30-44	122,170	33	41,386	36	2133	37	1311	32	167,000	34
45-59	147,543	40	37,275	33	2158	37	1619	39	188,595	39
> 60	74,951	21	26,978	23	1078	19	854	21	103,861	21
Total	365,750	100	144,768	100	5806	100	4136	100	490,460	100

Source: RISDA (1983), Table 2.7, p. 31

TABLE 6: No. of S/H by Tenurial Status & Race, 1977, P. Malaysia

Status	Bumiputra		Chinese		Indian		Others		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
O-O	275,564	75	77,549	69	4416	76	3007	72	360,536	74
NO-O	79,763	22	34,645	31	1309	23	946	23	116,665	24
M-O	10,423	3	2,574	2	81	1	181	4	13,259	3
Total	365,750	100	114,768	100	5806	100	4136	100	490,460	100

Note: O - O = Owner-Operator
NO - O = Non-Owning Operator
M - O = Mixed-Operator
Source: RISDA (1983), Table 2.9, p. 34

TABLE 7: No. of S/H Participating in Replant Programme, P.M., 1977

Frequency	Bumiputra		Chinese		Indian		Others		Total
	No.	%	No.	%	No.	%	No.	%	No.
0	89,584	33	15,088	17	924	26	1,519	55	107,112
1	161,240	60	66,244	73	2478	70	1,173	42	231,135
2	16,985	6	8,125	9	152	4	84	3	25,346
3	1,463	1	797	1	6	0.2	11	0.4	2,277
Tot.	269,272	100	90,251	100	3560	100	2,787	100	365,870

"0" refers to non-participants in replanting with old trees. This exclude FELDA & FELCRA smallholders with immature trees.
Source: RISDA (1983), Table 4.1, p. 124

TABLE 8: No. of S/H Participating in Replant Programme By Year, 1977

Year	Bumiputra		Chinese		Indian		Others		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
< 1960	46,616	24	26,638	31	914	33	261	19	76,429	26.5
'61-'70	82,267	41	38,995	46	1131	40	443	32	122,836	42.6
'71-'77	68,300	34	19,230	23	755	27	670	49	88,955	30.8
Tot.	199,183	100	84,863	100	2800	100	1374	100	288,220	100

Source: RISDA(1983), Table 4.3, p. 128

TABLE 9: Dist. of Non-Participants in RISDA's Replanting Programme By Size of Holdings and Race, P. Malaysia, 1977.

Holding Size	Bumiputra		Chinese		Others		Total	
Hectares	No.	%	No.	%	No.	%	No.	%
0.01-1.99	46,089	51.1	3,276	21.6	1,235	53.4	50,600	47
2.00-3.99	33,864	37.6	7,277	48.0	881	38.1	42,022	39
> 4.00	10,203	11.3	4,616	30.4	195	8.4	15,014	14
Total	90,156	100	15,169	100	2,311	100	107,636	100
Percentage	83.8		14.1		2.1		100	

Source: Adapted from RISDA (1983), Table 4.11, p. 142

TABLE 10: Outline of RISDA's Dev. Programmes and Projects, 1986

Programme	Projects
REPLANTING	Individual replanting, Simultaneous replanting Group replanting,mini-estates Rehabilitation
TRANSFER OF TECHNOLOGY	Advanced seedlings,cover crops,fertilisers, weed control,processing, Disease control,pest control, Tapping technique,use of etherel
SEPERDU	Cash crops,animal breeding, Acquaculture,village industry
INFRASTRUCTURE DEVELOPMENT	Collective Processing Centres Smoke houses,community halls, warehouses and stores,rubber factory,agricultural roads, minor bridges
SOCIAL SERVICES	SEPENTAS,Income Guarantee Scheme, Accidental Compensation Scheme.
INSTITUTIONAL DEVELOPMENT	Collective Marketing, Smallholder Development Centre, (PPPK),Smallholder Community Worker (PMPK), Smallholder Women Group Group,Cooperative Development

Source: RISDA (1986),

TABLE 11: RISDA's Budget - 1981 - 1986 (in M$ million)

ITEM	1981	1982	1983	1984	1985	1986
A. Dev. Exp.						
a) Direct Grant	66.5	47.0	38.2	28.3	40.0	29.4
b) Govt. Loan	-	42.3	38.8	58.7	61.3	44.4
c) From cess	189.0	236.7	219.4	201.4	198.2	203.8
d) Tot. Dev. Exp.	255.5	326.0	296.3	288.4	299.5	277.6
B. Adm. Exp.	83.7	98.7	76.7	80.2	84.4	84.1
C. Adm. & Dev. Exp.	339.2	424.7	373.0	368.6	383.9	361.7

Note that administrative expenditure is financed from direct government grant.

Source: RISDA (1987), Personal Communication, 17 April.

TABLE 12: Annual Expenditure of Rubber Industry (Replanting Board) 1968-72 and Rubber Industry Smallholders Development Authority, 1973-86 (in M$m)

YEAR	ADM.	RG	MED.	SHM.	SEPENTAS	TDE	TDAE	ECR
1968	7.3	133.1	-	-	-	133.1	140.4	52.7
1969	7.6	107.4	-	-	-	107.4	115.0	55.0
1970	7.8	102.8	-	-	-	102.8	110.6	57.3
1971	8.3	102.6	-	-	-	102.6	110.9	64.8
1972	9.0	105.4	0.3	-	-	105.4	114.4	64.1
1973	11.1	113.8	3.8	-	-	113.8	124.9	24.5
1974	19.2	158.5	11.2	-	-	158.5	177.7	67.7
1975	41.1	137.5	12.9	3.9	-	154.3	195.4	60.3
1976	34.6	126.5	15.4	4.0	-	145.9	180.5	60.3
1977	33.1	109.9	16.6	10.7	-	137.2	170.3	60.3
1978	64.6	122.6	70.4	6.8	-	199.8	264.4	66.6
1979	51.3	101.4	55.7	2.0	-	159.1	210.4	66.6
1980	58.7	136.5	80.3	4.9	-	221.7	280.4	88.6
1981	83.7	66.5	-	-	-	66.5	150.2	-
1982	98.7	47.1	7.3	7.3	25.0	241.0	339.7	-
1983	76.7	38.3	3.8	10.0	25.0	77.1	153.8	-
1984	80.2	28.4	3.8	10.0	45.0	87.2	167.4	-
1985	84.4	40.0	15.3	6.0	40.0	101.3	185.7	-
1986	84.1	29.4	17.2	4.7	20.0	71.3	155.4	-

Source: Computed from RISDA (1982), Tanam Semula Dalam Konteks Pembangunan Pekebun Kecil, Table 3, p. and RISDA (1987), Personal Communication with Deputy Director-General of RISDA,

Note: 1. Adm. = Administrative expenditure; RG = Replanting grants & input subsidies; MED = Mini-estate development; SHM = Smallholder Marketing scheme;
SEPENTAS = Replanting Incentive Scheme; TDE = Total Development Expenditure;
TDAE = Total Development & Administrative Exp.; ECR = Estate Cess Refund

2. Prior to 1981, all RISDA expenditures incurred from cess funds. But beginning from 1981, RISDA received direct grant from the government to cover its recurrent costs.

3. In the absence of separate figures that constitute replanting grants per se, interesting to know how much RISDA actually spent on replanting. World Bank (1984) suggests that the following method to estimate amount of replanting subsidies:-

i) 50 % of administrative expenditure (item marked ADM. in Table)

ii) 100 % of subsidies item (item marked RG in Table) because majority of expenditures incurred in item RG is for replanting grants and agricultural input subsidies.

TABLE 13: Hectarage Devoted To Production of Rubber, P. M.1950 -1986

Year	Area('000 ha)				Planted Area('000 ha)						S/H (%)
	New Plant		Replant		Mature		Immature		Total		
	E	S	E	S	E	S	E	S	E	S	
1950	2.4	1.4	17.8	1.4	706	635	89	7.9	795	642	44.6
1951	6.0	2.2	23.5	1.5	693	633	102	11.8	795	645	44.7
1952	2.9	2.8	20.9	1.7	693	632	115	16.3	808	648	44.4
1953	1.9	2.6	12.1	11.9	699	620	123	30.6	822	650	44.1
1954	2.9	1.3	15.8	9.1	687	620	129	40.9	817	659	44.7
1955	4.0	3.3	23.3	10.2	678	617	137	53.9	816	668	45.0
1956	5.9	5.3	31.7	18.8	660	609	152	78.7	813	682	45.6
1957	6.5	4.6	30.9	20.2	644	597	169	102.1	814	692	45.9
1958	5.6	4.4	26.2	24.2	621	595	180	131.1	802	715	47.1
1959	5.8	8.5	27.6	28.0	591	619	194	168.5	786	744	49.5
1960	8.8	10.2	30.4	28.1	568	615	214	194.2	783	766	50.2
1961	7.2	27.3	28.5	23.2	557	608	227	259.9	784	824	51.2
1962	4.0	33.4	25.5	28.0	552	636	227	339.3	780	900	53.5
1963	3.5	40.6	23.8	33.8	553	630	224	382.7	777	944	54.8
1964	2.5	23.3	23.8	32.3	548	631	218	416.2	766	976	56.0
1965	2.0	16.1	21.5	37.0	544	630	208	464.6	752	1022	57.5
1966	1.3	10.9	20.2	20.0	543	584	191	456.2	734	1041	58.6
1967	1.0	7.9	11.3	32.3	605	600	162	452.9	707	1053	57.8
1968	0.2	4.2	5.3	15.8	546	640	133	415.0	678	1055	60.8
1969	0.9	6.3	9.7	15.1	552	697	112	370.6	663	1067	61.6
1970	1.2	11.0	14.1	21.5	545	756	102	321.6	647	1077	62.4
1971	2.4	12.4	12.1	23.5	534	795	98	291.4	632	1088	63.2
1972	2.2	9.5	8.0	23.4	522	827	88	264.8	610	1092	64.1
1973	2.3	12.6	9.7	28.6	508	835	82	269.9	589	1105	65.2
1974	-	14.1	12.2	23.6	-	na	-	na	579	1392	70.6
1975	-	18.9	11.2	21.1	549	1108	34	300.0	583	1408	70.7
1976	-	18.7	8.5	14.3	-	na	-	na	573	1408	71.0
1977	-	20.1	7.4	12.9	-	na	-	na	559	1422	71.7
1978	-	34.3	6.7	13.3	-	na	-	na	542	1455	72.8
1979	-	23.4	-	14.2	-	na	-	na	526	1477	73.7
1980	-	19.2	-	15.3	-	na	-	na	526	1496	73.9
1981	-	1.1	-	22.6	-	na	-	na	534	1476	73.4
1982	-	0.6	-	23.7	-	na	-	na	525	1492	73.9
1983	-	0.4	-	33.4	-	na	-	na	516	1502	74.4
1984	-	0.3	-	28.7	-	na	-	na	na	na	na
1985	-	0.1	-	30.0	-	na	-	na	na	na	na
1986	-	0.06	-	na	-	na	-	na	na	na	na

Note : E = Estate, S = Smallholding

Sources:

- C. Barlow (1978), Appendix
- RISDA (1984), p. 16
- C. Findlay, J. Western & S. Chamala (eds) (1985),
- P.O. Thomas (1980)
- World Bank (1984), Vol. 3, Annex Table 2,

Table 14: Production and Yield of Rubber, P. Malaysia - 1950-86

Year	Production('000 tons)			Yield(kg/ha)		
	Estate	S/H	S/H %	Estate	S/H	S/H %
1950	382.0	321.9	45.7	541	507	93.7
1951	333.3	280.4	45.6	481	443	92.0
1952	346.7	245.4	41.4	500	389	77.8
1953	346.7	235.5	40.4	495	380	76.7
1954	350.5	244.1	41.0	510	393	77.1
1955	357.5	290.0	44.7	527	470	89.2
1956	356.5	277.9	43.8	540	456	84.4
1957	373.9	272.4	42.1	581	456	78.4
1958	395.8	275.9	41.0	638	464	72.7
1959	413.9	293.0	41.4	699	473	67.6
1960	419.9	297.6	41.5	739	483	65.3
1961	435.5	311.1	41.7	781	512	65.5
1962	445.5	281.1	41.5	806	497	61.6
1963	465.8	299.5	41.7	842	530	62.9
1964	484.6	319.5	42.1	883	559	63.3
1965	498.9	353.3	43.9	917	612	66.7
1966	522.3	392.7	42.9	961	672	69.9
1967	534.4	404.0	43.1	981	673	68.6
1968	572.2	479.4	45.6	1049	749	71.4
1969	603.1	596.7	49.7	1093	857	78.4
1970	621.2	594.8	48.9	1140	787	69.0
1971	661.7	609.1	47.9	1239	766	61.8
1972	659.5	599.0	48.0	1263	724	57.3
1973	673.8	791.7	54.0	1327	948	71.4
1974	706.5	863.5	55.0	1400	1039	74.2
1975	592.2	817.8	58.0	1422	1068	75.1
1976	688.0	912.0	57.0	1470	1093	74.4
1977	783.0	957.0	55.0	1485	1102	74.2
1978	795.5	1054.5	57.0	1448	1104	76.2
1979	643.5	1006.5	61.0	1430	1105	77.2
1980	596.6	973.4	62.0	1428	1104	77.3
1981	585.2	954.8	62.0	1450	1000	70.0
1982	592.8	927.2	61.0	1507	955	63.3
1983	550.8	979.2	64.0	1423	948	66.6
1984	550.8	979.2	64.0	1373	978	71.2
1985	508.2	1031.8	67.0	1397	1009	72.2
1986	na	na	na	1420	1037	73.0

Source:
- C. Barlow (1978)
- Economic Report, various issues
- Ani Arope (1982)
- C. Findlay, J. Western & S. Chamala (1985)

STATISTICAL APPENDIX FOR CHAPTER 7

TABLE 1: Age of Smallholders By Age Category

Age Group	No. of S/H	%
< 34	2	2.2
35 - 39	3	3.4
40 - 44	5	5.7
45 - 49	9	10.3
50 - 54	21	24.1
55 - 59	12	13.8
60 - 64	20	23.0
> 65	15	17.2
Total	87	100.0

TABLE 2: Educational Status of Smallholders

Years in School	No. of S/H	%
0	8	9.2
1	-	-
2	2	2.3
3	4	4.6
4	8	9.2
5	31	35.6
6	26	29.9
Others	8	9.2
Total	87	100.0

TABLE 3: Distribution of Household Size of Rubber Smallholders.

Household Size	No. of S/H	%
1 - 3	27	31.0
4 - 6	41	47.1
7 - 9	16	18.4
10 - 12	3	3.4
Total	87	100.0

TABLE 4: Distribution. of Occupational Pattern of Smallholders.

Occupation	No. of S/H	%
Solely Rubber	27	31.0
Mainly Rubber	55	63.2
Part Timers	5	5.7
Total	87	100.0

TABLE 5: Distribution of Other Economic Activities of Smallholders

Activities	No. of S/H	%
Other Agric.	20	33.9
Petty Business	3	5.1
Orchard	12	20.3
Padi Cultivation	17	28.8
Others	7	11.9
Total	59	100.0

TABLE 6: Working Experience of Smallholders

Years as Tappers	No. of S/H	%
< 10	4	4.6
11 - 20	25	28.7
21 - 30	28	32.2
31 - 40	14	16.1
> 40	16	18.4
Total	87	100.0

TABLE 7: Distribution of Membership in S/H Development Centre

Status	No. of S/H	%
Members	71	81.6
Non-Members	16	18.4
Total	87	100.0

TABLE 8: Distribution of Land Ownership Category

Category	No. of Cases	%	Ha.	%
Owner-Operator	80	92.0	121.2	86.4
Owner-Tenant	4	4.6	9.4	6.7
Pure-Tenant	3	3.4	9.7	6.9
Total	87	100.0	140.3	100.0

TABLE 9: Total Area Replanted With Rubber

Status	Area (ha)	%
Tot. Replanted Area	171.6	75.3
- Tot. immature area	37.0	-
- Tot. mature area	134.6	-
Tot. Ha. Not Replanted	57.0	24.9
- Tot. still prod. yield	53.3	-
- Tot. no more yield	3.7	-
Total Ha. in survey area	228.6	100.0

Note: Total land idle = 27.1 hectares
Average size of land worked = 1.8 hectares

TABLE 10: Distribution of Replanted Rubber Holdings By Size.

Size Cat.(Ha)	No. of Cases	%	Ha.	%
< 0.6	17	12.2	8.9	5.1
0.6 - 1.0	44	31.7	37.1	21.2
1.1 - 1.5	37	26.6	46.4	26.5
1.6 - 2.0	26	18.7	42.3	24.1
2.1 - 2.5	5	3.6	12.0	6.8
2.6 - 3.0	5	3.6	14.4	8.2
> 3.1	4	2.9	14.1	8.0
Total	139	100.0	175.2	100.0

TABLE 11: Labour Utilisation in Rubber Cultivation

Activity	Family Lab.	Hired Lab.	Coop. Lab.	Others	Total
	..... in percentage				
Felling	32.2	57.5	6.9	3.4	100
Holing	5.6	31.0	6.9	3.4	100
Planting	78.2	11.5	6.9	3.4	100
Poisoning	78.2	11.5	6.9	3.4	100
Fertilising	79.3	10.3	6.9	3.4	100
Tapping	93.1	6.9	-	-	100
Processing	92.0	8.0	-	-	100

TABLE 12: SMALLHOLDER RUBBER CROP BUDGET

YIELD (kg/ha)	946
PRICE (M$/kg)	1.43
GROSS RETURN (M$/kg)	1,353
PRODUCTION COSTS	
- Fertiliser	40
- Plant protection	8
- Misc. tool	12
- Maintenance	100
- Tapping	236
Total	396
LAND TAX	20
Total Costs	416
NET RETURNS (M$/ha)	937

Note: - this is for a " typical " unorganised smallholder situation in 1984
- assumes hired tappers undertake 33 % of tapping on share basis of 5
Source : Robert B. Campbell, et. al. (1985), Annex 8

TABLE 13: PROJECTED RETURNS FROM RUBBER AT THREE PRICE LEVELS

Age of Trees	Yield (kg/ha)	Gross Revenue $1.43	Gross Revenue $1.54	Gross Revenue $1.65	Costs $1.43	Costs $1.54	Costs $1.65	Net Returns $1.43	Net Returns $1.54	Net Returns $1.65
0	-	-	-	-	2441	"	"	(2441)	"	"
1	-	-	-	-	734	"	"	(734)	"	"
2	-	-	-	-	751	"	"	(751)	"	"
3	-	-	-	-	704	"	"	(704)	"	"
4	-	-	-	-	652	"	"	(652)	"	"
5	-	-	-	-	610	"	"	(610)	"	"
6	-	-	-	-	618	"	"	(618)	"	"
7	503	719	774	830	1139	1164	1191	(420)	(390)	(361)
8	856	1224	1318	1412	1226	1268	1312	(2)	50	100
9	1184	1693	1827	1953	1428	1488	1546	265	339	407
10	1415	2023	2179	2346	1577	1648	1720	447	531	626
11	1367	1955	2105	2256	1411	1483	1552	544	622	704
12	1494	2136	2300	2465	1500	1577	1653	636	723	812
13	1540	2202	2371	2541	1535	1614	1690	667	757	851
14	1647	2355	2536	2717	1606	1690	1774	749	896	943
15	1575	2252	2425	2598	1556	1636	1717	695	789	881
16	1596	2282	2458	2633	1579	1665	1752	703	793	881
17	1650	2360	2542	2723	1549	1633	1717	810	909	1006
18	1720	2460	2650	2838	1599	1685	1772	861	965	1066
19	1664	2380	2563	2746	1559	1643	1727	821	920	1019
20	1584	2265	2439	2613	1502	1583	1663	763	856	950
21	1525	2181	2349	2517	1443	1522	1599	738	827	918
22	1527	2184	2352	2520	1446	1525	1601	738	827	919
23	1527	2184	2352	2520	1218	1294	1374	966	1058	1146
24	1527	2184	2352	2520	1142	1218	1297	1042	1134	1223
25	1527	2184	2352	2520	1129	1208	1285	1085	1144	1235

Note: - adapted from RISDA rubber mini-estate model
- assumes hired tapping labour receiving 50 % share of output
- all costs financial; unpaid family labour not costed
- farmgate price approximately M$1.14 / kg (Nov. 1984)

Source: Robert B. Campbell, et.al. (1985), Annex 1

STATISTICAL APPENDIX FOR CHAPTER 8

Padi Fertiliser Distribution Under Government Subsidy Schemes, '51-87

Year	States	Subsidy Rate % *	Fertiliser Distrib. (tons)
1951	Kelantan	Free to 100 Penghulus	-
1952-53	Kelantan/Trengganu	50 %	210
1953-54	Kelantan/Trengganu	M$6/100 lb.	710
1954-55	Kelantan/Trengganu	M$4/100 lb.	296
1955-56	Kelantan/Trengganu	M$7.50/100 lb.(50%)	891
1956-57	Malacca	M$15/acre	287
	Kelantan	M$4.30/100 lb. (34%)	926
	Trengganu	discontinued	51
	Malacca	M$10/acre	140
	N. Sembilan	50 %	61
1957-58	Kelantan	33.3 %	1398
	Trengganu	M$7.10/100 lb. (50%)	380
	Malacca	M$20/acre	125
	N. Sembilan	50 %	223
1958-59	Kelantan	M$0.90 of M$11.40 cost	1710
	Trengganu	M$2/100 lb.	472
	Malacca	M$3.40 of M$13.40 cost	93
	N. Sembilan	38 %	263
1959-60	Kelantan	discontinued	3049
	Trengganu	M$1.00/100 lb.	666
	Malacca	same but credit arranged	150
	N. Sembilan	38 %	176
1960-61	Kelantan	discontinued	2656
	Trengganu	discontinued	460
	Malacca	as before	396
	N. Sembilan	M$7.00/acre	270
1961-62	No information by states; First year of uniform 50 % Federation subsidy - Kelantan included with no state scheme; Penang had own state scheme & did not participate		
1962-63	Kelantan	No programme	4211
	Trengganu	40 %	511
	Malacca	40 %	294
	N. Sembilan	40 %	388
	Kedah	40 %	4969
	Perlis	40 %	473
	Perak	40 %	202
1963-64	Kelantan	No programme	4891
	Trengganu	30 %	1600
	Malacca	30 %	169
	N. Sembilan	30 %	293
	Kedah	30 %	7002
	Perlis	30 %	625
	Perak	30 %	678
1964-65	Kelantan	No programme	4389
	Trengganu	20 %	1387
	Malacca	20 %	137
	N. Sembilan	20 %	321
	Kedah	20 %	7369
	Perlis	20 %	717
	Perak	20 %	539

1965-66	Kelantan	10 %	5771
	Malacca	10 %	115
	N. Sembilan	10 %	301
	Kedah	10 %	3273
	Perlis	10 %	930
	Perak	10 %	207
1966-67	Starting in 1966, the government planned to subsidise the price by 30 %. This rate of subsidy would be maintained over the next five year period. The gross national usage over the 1961-69 period were as follows:-		
1961	Federation	50 %	3830
1962	Federation	40 %	8173
1963	Federation	30 %	8889
1964	Federation	20 %	11,469
1965	Federation	10 %	12,479
1966	Federation	30 %	24,822
1967	Federation	30 %	25,000
1968	Federation	30 %	25,000
1969	Federation	30 %	n.a.
1970	The government stopped fertiliser subsidy programme		
1973-74	The government re-introduced fertiliser subsidy because the world oil crisis increased the price of fertiliser. Rate of subsidy was M$10 / bag.		
1974-75	Federation	M$10/bag(2 bags/acre)	19,458
1975	Federation	M$10/bag(2 bags/acre)	5996
1975-76	Federation	M$10/bag(2 bags/acre)	15,133
1976	Federation	M$10/bag(2 bags/acre)	3825
1977-79	The government listed fertiliser as a controlled item under the Control of Supplies Ordinance, 1974.		
1979-87	The government introduced a 100 % fertiliser subsidy making fertiliser a free input in padi cultivation.		

Source: Oto Doering (1973), Malaysian Rice Policy and the MUDA River Irrigation Project, Ph. D. Thesis, Cornell University, pp. 258-260 and Ministry of Public Enterprise (1986), Personal Communication.

(*) indicates % of market price

STATISTICAL APPENDIX FOR CHAPTER 9

TABLE 1: Age of Farmers According to Age Category in Krian

Age Group	No. of Farmers	%
25 - 29	2	2.7
30 - 34	5	6.7
35 - 39	6	8.0
40 - 44	8	10.7
45 - 49	16	21.3
50 - 54	17	22.7
55 - 59	10	13.3
60 - 64	4	5.3
65 +	7	9.3
Total	75	100.0

TABLE 2: Educational Status of Farmers in Krian District

Years in School	No. of Farmers	%
0	3	4.0
1	1	1.3
2	4	5.3
3	4	5.3
4	5	6.7
5	27	36.0
6	23	30.7
Others	8	10.7
Total	75	100.0

TABLE 3: Distribution of Family Size

H/H Size	No. of Farmers	%
1 - 3	5	6.8
4 - 6	29	39.7
7 - 9	28	38.4
10 - 12	13	17.3
Total	75	100.0

TABLE 4: Distribution of Occupational Pattern of Farmers

Occupation	No. of Farmers	%
Solely Padi	20	26.7
Mainly Padi	48	64.0
Padi Part-Time	7	9.3
Total	75	100.0

TABLE 5: Distribution of Other Economic Activities of Farmers

Activities	No. of Farmers	%
Other Agric.	17	35.4
Petty Business	14	29.2
Carpentry	5	10.4
Govt. Employee	10	20.8
Others	3	6.3
Total	48	100.0

TABLE 6: Working Experience of Farmers

Years	No. of Farmers	%
< 10	7	9.3
11 - 20	14	18.7
21 - 30	19	25.3
31 - 40	26	34.7
> 40	9	12.0
Total	75	100.0

TABLE 7: Distribution of Membership in AFA(PPK)

Status	No. of Farmers	%
Members	72	96.0
Non-members	3	4.0
Total	75	100.0

TABLE 8: Distribution of Land Ownership Category, 1978/79 & 1986/87

Category	1978/79		1986/87	
	No.	%	No.	%
Owner-Operator	19	25.7	16	21.3
Owner-Tenant	32	43.2	38	50.7
Pure-Tenant	23	31.1	21	28.0
Total	74	100.0	75	100.0

Note: 1 respondent did not plant padi in 1978

TABLE 9: Dist. and Category of Land Ownership, '78 & '86(%)

Land Sized	Owner-Op.		Owner-Tenant		Pure-Tenant		Total	
(Ha)	1978	1986	1978	1986	1978	1986	1978	1986
< 1.0	29.4	35.7	-	-	38.0	42.9	16.0	19.7
1.1 - 1.5	17.6	14.3	6.3	8.3	14.3	9.5	9.9	9.9
1.6 - 2.0	23.5	28.6	56.3	41.7	42.9	38.1	38.3	38.0
2.1 - 2.5	11.8	14.3	12.5	25.0	4.8	-	21.0	15.5
2.6 - 3.0	11.8	7.1	6.3	5.6	-	4.8	4.9	5.6
3.1 - 3.5	-	-	9.4	11.1	-	-	3.7	5.6
3.6 - 4.0	5.9	0	0	2.8	0	4.8	1.2	2.8
> 4.1	-	-	9.4	5.6	-	-	3.7	2.8
Total	100	100	100	100	100	100	100	100

TABLE 10: Distribution of Farm Size Worked, 1978 & 1986

Average Size	1978/79 (ha)	1986/87 (ha)
Land Worked	1.73	2.05

TABLE 11: Labour Utilisation in Padi Cultivation, 1986/87

Activity	Family Labour	Hired Labour	Family + Wage	Total
	..... in percentages			
Prepare Field	53.3	21.3	25.3	100
Rooting	90.7	4.0	5.3	100
Planting	17.3	48.0	30.7	100
Fertilising	90.7	2.7	6.7	100
Poisoning	88.0	2.7	9.3	100
Harvesting	8.0	88.0	4.0	100